THE RAILWAY GAZETTE
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INCORPORATING
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DIESEL RAILWAY TRACTION SUPPLEMENT

The April issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price* 1s.

EASTER PUBLISHING ARRANGEMENTS

To conserve paper and reduce postage of copies in Easter week, this and next week's issues of THE RAILWAY GAZETTE *have been combined. There will thus be a fortnight's interval until the next regular weekly issue, due to be published on Friday, April* 10

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are necessarily available for export

NOTICE TO SUBSCRIBERS

Consequent on further paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list which will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays **9.30** *a.m. till* **5.0** *p.m.*
The office is closed on Saturdays

ERRORS AND MISPRINTS

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time

Fuel Rationing and Transport

THE debate on the coal situation in the House of Commons on March 17 was a sorry exhibition of an admission by the Government that at last it had been forced into a position which many have foretold since the outbreak of war. Its pusillanimous coal policy has attracted criticism practically since the war commenced, and the recitation by the Secretary for Mines and the President of the Board of Trade of the factors in the position which has now been reached in large part merely bear out the forebodings of those who were anxious that the Government should deal energetically with the basic problem of fuel supplies. The fact remains that the fundamental need of the coal industry is skilled miners, and for the retention of a large body of them in the armed Forces at a time when there is widespread belief that they could have been more usefully employed in the pits, and for the attraction away from the pits into other and more remunerative forms of employment of some of the best of the younger men, responsibility must rest with the Government as a whole. Obviously a decision as to whether in the past two years miners have been better employed in the armed Forces than they would have been in their own industry has had to be a matter for the Government, even as it must remain so at this juncture. It is at any rate to some extent satisfactory that Government spokesmen now admit frankly that the problem facing the coal industry is one of production and *not of transport*. The rationing of fuel of all kinds which is to be put into effect will no doubt help to ease a position which, in the opinion of many, should never have been permitted to arise, and which could have been avoided if tackled in time.

Canadian Pacific Railway Dividend Decision

The directors of the Canadian Pacific Railway Company, after a meeting held in Montreal on March 16, issued an announcement to the effect that after careful consideration it had been decided not to declare any dividend for the year 1941 on the ordinary stock. In making this decision the directors were of the opinion that greater benefit would inure to the stockholders through the further strengthening of the financial resources of the company than from a disbursement of current income. They point out that the increase in earnings during the last two years has been due almost entirely to wartime activity, and cannot be depended on as a true indication of future results. Stockholders' equity will continue to be enhanced to the extent that capital expenditures and maturing obligations are made without recourse to new financing, and the company will be in a better position to meet the unpredictable conditions of the post-war period which may require extensive changes in facilities and services. The last dividend on the ordinary stock was 5 per cent. for 1931, and in 1940 a sum equal to 4½ per cent. was earned on the ordinary stock. Last year's net traffic figure showed a gain on that year of no less than $10,319,000, and there had been general expectations that at least 5 per cent. would be paid on the ordinary capital.

Dividends on Worthless Stock

One of the most remarkable dividend anomalies on record has recently come under review in the United States. In 1901 the Southern Railway acquired a majority of the stock of the Mobile & Ohio RR., and in substitution issued to M. & O. stockholders stock trust certificates guaranteeing in perpetuity interest at 4 per cent. on the stock. In 1940 the property of the Mobile & Ohio, which had fallen on bad times, was sold at auction, and its stock was declared worthless; at the same time the Mobile & Ohio was merged with the Gulf, Mobile & Northern to form the Gulf, Mobile & Ohio,

REDUCTION IN SIZE OF PAGE

To economise in paper our readers will observe a slight reduction in the size of THE RAILWAY GAZETTE *in that the size of the page has been reduced from* **9** *in.* × **12** *in. to* **8½** *in.* × **11½** *in. The type area of the page remains the same, namely,* **7** *in.* × **10** *in., but the surrounding margins have been reduced. This of course detracts from the appearance of the paper, but is one of the exigencies of the war*

and so lost its separate identity. As a result, the Southern lost its control over the M. & O., and not unnaturally sought a ruling from the courts as to whether its obligation to pay dividends on worthless stock was still binding. On November 9, 1940, Justice W. T. Collins, of the New York State Supreme Court, ruled that it was, and dismissed the Southern's application, and on May 15, 1941, the Appellate Division of the Supreme Court of New York State, by a majority of four to one, upheld the Justice's decision. A further appeal is now being made to the highest Court of the State, but observers consider that unless a constitutional question arises, the decision will stand as final. The number of certificates is 56,502, and the annual amount of the dividend is $226,008.

Overseas Railway Traffics

Due to the near approach of the Easter recess we are unable to give the usual fortnightly results of overseas railways. In the 37th week of the financial year of the British-owned Argentine railways the actual receipts are mostly higher than those for the 36th week, but on comparison with the earnings for the corresponding week in 1941 they are lower in the case of three of the principal companies, as will be seen from the accompanying table. On the other hand, the Argentine North Eastern has an increase of 43,500 pesos, and the Entre Rios one of 46,900 pesos for the week in comparison with the previous year, and the aggregate increases to date are 1,015,700 pesos on the Argentine North Eastern and 1,543,500 pesos on the Entre Rios.

	No. of week	Weekly traffics	Inc. or decrease	Aggregate traffic	Inc. or decrease
Buenos Ayres & Pacific* ...	37th	1,660	—285	52,442	+2,319
Buenos Ayres Great Southern*	37th	2,895	+ 37	89,430	+9,991
Buenos Ayres Western* ...	37th	957	— 76	31,320	+4,096
Central Argentine* ...	37th	1,763	—240	65,173	+8,908
		£	£	£	£
Canadian Pacific	11th	947,600	211,600	9,217,000	2,028,000

* Traffic returns in thousands of pesos

Antofagasta traffics for the first 11 weeks of the present year show an advance of £21,420, and the Leopoldina for the same period is £56,708 better. United of Havana receipts for the 37 weeks of the financial year are £171,534 higher.

The Mozambique Government Railways

The Government of the Portuguese colony of Mozambique operates, through a *Direcção dos Serviços dos Portos, Caminhos de Ferro e Transportes*, 1,204 km. of railway, of which 1,052 are of the normal South African gauge of 3 ft. 6 in. and 141½ km. of 0·75 m. (2 ft. 5½ in.). The total mileage is made up of five separate and unconnected lines, of which the principal are the Lourenço Marques and the Mozambique, 372 km. and 442 km. in length respectively. The annual report of the *Direcção* for 1940, just received, gives the following operating statistics for railway working :—

	1939	1940
Passengers, number	508,290	472,712
Goods, tons	1,802,748	1,867,959
Train kilometres	1,371,166	1,318,095
	Contos	Contos
Passenger receipts	8,385	7,548
Goods receipts	78,134	69,085
Total receipts	87,856	76,632
Working expenses	43,246	42,847

The receipts for the whole service of railways, road transport, airways, and harbours, amounted to 126,481 contos, compared with 139,788 contos in 1939. Expenses were 73,230 contos, against 75,267 contos, leaving net earnings 53,251 contos ; the operating ratio was 57·9 per cent. During the year the bridge over the river Incomati, on the Limpopo line, was opened, and 31 km. of the Tete line extension and 32 km. of the Mozambique line were also opened to traffic.

A Short Way with U.S.A. Strikers

Direct action has been taken by the United States Administration in the matter of the strike of employees on the Toledo, Peoria & Western RR., reported in the March 6 and 13 issues of THE RAILWAY GAZETTE, for by direction of President Roosevelt the working of the line was taken over on March 21 by the U.S. Government. The T.P. & W. is a line 224 miles long, running westwards from Effner, a point 80 miles south of Chicago, for 224 miles to Peoria and Keokuk; junctions with various large railway systems are made at the extremities and intermediately, and the importance of the route from the war point of view is that it enables important east-west munitions traffic to by-pass Chicago. The strike began on December 28, and after a considerable amount of violence and sabotage on the part of the strikers, the railway on January 19 obtained an injunction from the federal court at Peoria restraining the Brotherhood of Railroad Trainmen and the Brotherhood of Firemen & Enginemen from violent action and limiting the number of pickets that the strikers might establish at any given point. The following day the United States Conciliation Service began an attempt to bring the two sides together, but both proved adamant, and the Presidential decree, after a strike lasting just under three months, is the result. This is not, of course, the first experience of the U.S. Government with railway operation, as apart from many small railways serving military establishments in the United States, the Alaskan Railway is Government owned and operated.

An L.N.E.R. Steamer Renamed

The London & North Eastern Railway is reviving many old memories by its decision to rename the steamer *Felixstowe*, as *Colchester*. The former *Colchester* of the Great Eastern Railway fleet, built by Earle's at Hull in 1888, was a noteworthy vessel. Although the twin-screw system had been introduced into the fleet with the *Ipswich* and *Norwich* of 1883, she and her sister the *Cambridge*, were a great improvement on the design and had steel hulls instead of iron. With a gross tonnage of 1,160, compound engines gave the ships a trial speed of 15 knots. The *Colchester* was designed for the Harwich-Antwerp service, carrying over 300 passengers in addition to livestock and various kinds of cargo. She was re-engined with triple-expansion engines in 1900, making 14 knots with greater economy, and during the last war was chased by submarines no fewer than four times, on each occasion escaping because of her speed. On the fifth occasion torpedo boats chased the vessel and took her into Zeebrugge, where she was condemned and passed into the German Navy to be sunk by a German mine in Kiel Bay in 1918.

Track Circuit Recommended in 1884

It is curious to read that an Inspecting Officer, Major-General Hutchinson, recommended the Great Eastern Railway to instal a track circuit after a collision on March 22, 1884, at Stepney, caused by a signalman who had intended to lower the starting signal, but had pulled the adjacent home signal lever by mistake. The home signal was 200 yd. in rear of the station and a train was allowed to approach it, with another waiting. Rotation locking would have been effective, the General said, but possessed disadvantages, and " a better way to guard against the repetition of such a mistake would appear to be to insulate the rails between the home and starting signals and maintain a low current of electricity in each rail; the first pair of wheels which passed the home signal would then short circuit these currents and they would remain short circuited until the last pair of wheels had passed beyond the starting signal; by means of electrical interlocking the home signal could be put to danger and kept in that position so long as the rails between the home and starting signals were short-circuited." This must surely be the earliest official recommendation of the kind and we wonder what the G.E.R. had to say about it.

Signals and the Blackout in the U.S.A.

Since America entered the war, the visibility of signal lights from the air has become of importance in that country and many suggestions have been made for dealing with it, some of which were reviewed recently in *Railway Signaling*. One would have thought that information as to the steps taken here for hooding and dimming at night, which have proved sufficiently effective, would have been officially communicated to the American railways before this, but apparently

this is not the case. There is much approach lighting in the States and on many routes therefore the signal lights would normally not be visible but, when visible, would indicate that a train was in the vicinity. There should be no great difficulty in applying dimming to most installations, especially with the aid of light sensitive relays, already in use in America. The three-position semaphore presents some difficulty. Some of the arrangements mentioned by our contemporary would undoubtedly reduce the efficiency of the signals at all hours and we feel it would be a mistake to adopt them, unless some very urgent local reason demanded special precautions. An increase in accidents would be almost certain to result and urgent traffic would be needlessly hindered. There seems no special reason why American lines should not find the simple methods adopted in Great Britain adequate for all practical purposes. We should have imagined the greatest danger to come from the powerful headlights, necessary because so much mileage is unfenced. They would give a far better guide to the path of a railway than any signal light.

Early American Locomotive Practice

A point of interest about early locomotive history in the United States is the rapidity with which developments took place in the coupling of axles. On the Philadelphia & Reading Railroad, for example, the first 0-6-0 was introduced in 1844, the first 0-8-0 in 1846, and by 1863 a remarkable 0-12-0 tank engine had been built for banking purposes, though this 45-ton machine, with its 20 in. × 26 in. cylinders, was in advance of its time, and was later rebuilt as a 0-10-0 with 8 tons deducted from its weight. The 0-6-0 was an early Baldwin production, and was of note as being fitted with the Baldwin flexible beam truck, which permitted lateral movement of the first and second pairs of coupled wheels independently of one another, the coupling rods being fitted with spherical brasses to enable them to conform to the movement of the wheels. The same principle was incorporated in the 0-8-0s of 1846, which were also Baldwin engines. Another early invention of great importance was the arrangement of equalising beams patented in 1838 by Joseph Harrison, which made it possible to build coupled engines sufficiently flexible to work over the poorly laid tracks of the period. The first Reading 4-4-0, named *Gowan & Marx*, came into service in 1840 with these equalising beams, and achieved such fame as a result of moving a train of 101 four-wheel wagons weighing with itself 378 tons at 9·8 m.p.h. over the 58¼ miles from Reading to Philadelphia, on a consumption of 50 cwt. of anthracite, that its builders were able to transfer their business lock, stock, and barrel from Philadelphia to Russia in order to build the motive power for the Moscow to St. Petersburg Railway, then under construction. The first Reading 4-6-0, the *Chesapeake*, was also built as early as 1847.

Corridor or Open Coach

When in peacetime the relative merits of side- or centre-corridor stock were debated, supporters of the open vestibule coach sometimes painted romantic pictures of attendants bearing rich food and drink passing unhindered through the train, distributing refreshment to passengers in their own seats instead of inviting them to walk down the corridor to the restaurant car. Today this seems an idle fantasy, and a better argument is the convenience of the open carriage when boarded in the blackout. Often a single glance will tell the traveller whether there are vacant seats, and if he has to investigate several vehicles he need contend only with a door at each end instead of opening what seems, in a side-corridor coach, an interminable succession, possibly disturbing the blackout of several compartments as he does so. On the other hand, if stand he must, he feels far more conspicuous in a brightly lit open coach than beneath the dim blue lamps of the corridor, and only the most unconventional of men would contemplate sitting on his suitcase in the gangway. We remember being told on posters in the past that "war settles nothing." So far it has not conclusively settled the corridor or open coach controversy.

Mr. H. E. Horne

THE retirement from active service with the L.M.S.R. of Mr. H. E. Horne, Assistant Chief Commercial Manager, brings to a close the railway career of an officer whose experience and knowledge was remarkably wide. He commenced on the bottom rung of the railway ladder, and his abilities won early recognition and brought him promotion and opportunities for increasing experience as the years went by. One striking example was his appointment at the early age of 33 as Stationmaster at Leeds (Wellington) Station in 1909, when conditions there had reached a state of deterioration which was no credit to the high traditions of the former Midland Railway, and which the management desired to have redressed quickly. Under Mr. Horne a change for the better was quickly apparent, and before long the staff worked as a united team, one and all imbued with *esprit de corps* and determined that Leeds Station should be a model of cleanliness and smartness of performance in the handling of trains and passenger traffics. It became a commonplace for the heavy Scottish trains to arrive in No. 1 platform and be away again with a fresh engine attached in a minute and a half to the astonishment of many railwaymen who had previously thought such a thing impossible. A Yorkshireman of a genial and breezy disposition, Mr. Horne was ever receptive to new ideas and ready to help everyone who called upon his sympathy and knowledge, and there is no doubt that the success of Mr. Ashton Davies as Chief Commercial Manager, when his department was re-organised in 1932 on the recommendation of Sir (then Mr.) Ernest Lemon, was due in some measure to the untiring efforts and initiative of Mr. Horne as his Assistant. Still full of energy, he carries with him into retirement the good wishes of numerous old colleagues on all the British railways who have been associated with him through the medium of the Railway Clearing House Conferences of which he was a member for many years.

New South Wales Government Railways

SOME of the main reasons for the satisfactory results obtained by the New South Wales Government Railway for the year ended June 30, 1941, have been indicated in the Overseas Railway Affairs columns of THE RAILWAY GAZETTE of January 9, 1942. A surplus of £235,951 was attained over working expenses, interest, and other statutory charges. This compares with a net deficit of £443,833 for the year 1939-40 and a surplus of £51,469 for the year 1937-38. Gross earnings of the railways in the year 1940-41 were a record and showed an increase of £3,260,759 over the previous year, and the working expenses, which were £2,514,990 higher, included £700,000 provision for accruing maintenance. The net revenue of £6,053,686 was equivalent to a return of £4 1s. per cent. on capital and, added to the Government's contribution of £800,000 towards meeting losses on developmental lines, enabled the above-mentioned surplus to be realised. The principal results of working compare with those of the preceding year as follow :—

	1939-40	1940-41
Miles open...	6,141	6,127
Train-miles	29,470,821	32,285,300
Passengers	179,066,305	194,145,738
Goods, minerals, and livestock, tons	14,619,716	18,031,611
Operating ratio, per cent.	73·40	73·92
	£	£
Passenger receipts	6,347,204	7,636,028
Goods, minerals, and livestock receipts ...	10,851,393	12,414,964
Total earnings	19,954,851	23,215,610
Working expenses	14,646,934	17,161,924
Net earnings	5,307,917	6,053,686

Receipts from first class travel were £1,344,667, representing 17·61 per cent. of the total passenger earnings, and were £248,384 higher than for the previous year. This increase was entirely in country travel, as first class suburban receipts, amounting to £2,906, were £39,407 lower. First class accommodation was abolished on Sydney suburban services from January 1, 1940. Earnings from second class and workmen's tickets throughout the system in the year under review amounted to £6,291,361, an improvement of £1,040,440. Passenger business as a whole reached a record level. Country

and Interstate traffic was exceptionally heavy and to relieve the many trains which run throughout the night hours and so to conserve the limited sleeping-berth accommodation available, it was decided to run a series of daylight expresses on the main lines. The first train placed in service was the Riverina Express which began to run on May 12 and has proved its popularity. A buffet service has been inaugurated on this express. A fast goods service was inaugurated on June 27 between Darling Harbour and Wallangarra, a distance of 493 miles, effecting a reduction of 10 hours in the running time between those points. To handle additional traffic 1,000 new 24-ton capacity goods wagons of the "U" type and fifty additional goods brake vans are being constructed by contractors. The average mileage run per engine per annum increased from 31,732 to 33,715, equivalent to 6·2 per cent. Notwithstanding the extra work exacted from the locomotive stock, the efficiency and punctuality of train services, generally, were not impaired. The welding of rails into longer lengths was continued, and 51 miles 28¾ chains of flash-butt welded rails and 12¼ chains of thermit welded rails were laid in during the year. Duplication work on the section from Allan's Creek to Port Kembla North was completed, and approval was given to duplicate the track from Wollongong to Allan's Creek. This last-mentioned work was sufficiently complete at the end of the financial year to permit of both sections being brought into use on July 15, 1941. The refreshment room services earned £840,966, the highest on record, and a net profit of £30,919 was secured after providing for interest and all other charges.

Exceptional Loads

FROM time to time the British railways receive many suggestions from members of the public, and on more than one occasion an enthusiast, after witnessing the passage of an exceptionally awkward load through a station, has suggested that wagons should be constructed with adjustable axles and wheels to enable them to run on the inside rails of double tracks, thus enabling much wider loads to be dealt with. Trifling obstacles such as bridge buttresses, water columns, and signals, to say nothing of overbridge girders, are apt to be overlooked by such enthusiasts, but they frequently figure vitally in the calculations which have to be made when the railway companies are called upon to convey some unusually large piece of machinery. Brunel's broad gauge would have been of the utmost value to the British railways in meeting the present requirements of industry, for the size of the heavy pieces of machinery they are asked to convey grows ever larger. The width of their existing track, however, does place definite limitations upon the size of loads which can be carried, but, despite these, the dimensions of loads which can be safely conveyed are surprisingly large. The basis of the safe working of exceptionally large loads is the loading gauge, which takes into account the distances between the sides of lines, the height of bridges and tunnels, the position and height of platforms, and the radius of curves which have to be negotiated, and other relevant factors. Such loads are conveyed either in specially-constructed wagons or by means of special out-of-gauge trains, but for obvious reasons every effort is made to use the first method.

Each of the British railways maintains a large number of vehicles specially designed to facilitate the transport of articles of unusual weight or size, or of bulky articles which require special care in transit. Many of these have wells enabling machines to be loaded to within a few inches of rail level, and they are in constant demand for the transport of castings, ingots, stern frames, transformers, and so forth. Steel girders up to 120 ft. in length can be conveyed on flat bogie wagons and many other types of bogie bolster fitted wagons are available for the conveyance of girders, lifeboats, boilers, electrical gear, cranes, heavy guns, and tanks. Each of the British railways has a staff of men specially trained to supervise all operations incidental to the safe transport of such loads, and frequently they also undertake the task of delivery to the site of large boilers, transformers, and similar pieces of machinery. For this purpose the British railways have provided specially staffed and equipped tool vans which travel with the loads to their destinations and so enable the trained staff to perform unloading operations beyond the capacity of the average station equipment. Among the many special wagons they own, probably the most outstanding is the 150-ton well trolley wagon set. This 56-wheel five-unit set is able to carry a concentrated load of 156 tons by the cantilever principle and it is frequently in use for the conveyance of heavy electrical stators, turbine castings, stern frames, and marine engines.

For articles such as propellers, machinery with long projecting portions, and girders, the loading dimensions of which appreciably exceed the loading gauge, it is necessary to run an out-of-gauge special train. This method is not adopted unless absolutely necessary, as it obviously involves the temporary cessation of traffic on the opposite track during its passage. Careful calculations and arrangements precede the conveyance of such loads, as it is frequently necessary to take down and re-erect signal posts *en route*, remove parts of the overhanging verandah at stations, and on more than one occasion a section of the line has had to be slued to one side so that a bridge or tunnel can be negotiated safely. Nevertheless these operations are carried out expeditiously by skilled men, and enable the British railways to deliver the goods safely. When it is appreciated that the demands of the Services and industry have increased to such an extent that the railways now carry almost as many unusual loads in one day as they previously carried in a month, their contribution to the war effort in this direction alone is of considerable importance. Apart from the variety of wagons used in connection with out-of-gauge loads, the British railways have provided many vehicles to facilitate the conveyance of particular types of traffic such as bricks, bulk grain, and motorcar bodies, while their extensive fleet of refrigerated and insulated vans ensures the safe conveyance of perishable traffic, the importance of which service to the community in wartime is not one of the least of those rendered by the British railways.

Nationalised Railways and Accidents

THERE is one aspect of the nationalisation of British railways which its advocates never mention. That is the passenger injured in a railway accident. As the law stands at present nationalised British railways could kill and maim travellers, lose or damage luggage or goods without incurring any liability. Recently there have been at least two examples of the special position which the State occupies towards all citizens in the matter of liability for accidents on the road. At present the State is very largely represented on the road in the form of drivers of various vehicles, and it is well to bear in mind that many hold the view that after the war it may be represented on the rails, if the socialist's dream of railway nationalisation should become a reality. At Liverpool Assizes an action was brought recently for damages arising out of a road accident in which an army vehicle was involved. The vehicle at the time was on official duty, but it was not on an authorised route, and apparently the army authorities washed their hands of all responsibility. Mr. Justice Stable pointed out that service vehicles are exempt from compulsory insurance and that anyone who was injured or killed had no remedy against the Crown. There are today many thousands of service vehicles on the roads, and one would hesitate to suggest that their principal characteristic is the care with which they are driven; yet the only civil claim for death or injury which can be brought is against the driver, who may have no more backing than his, or her, service pay. In the event of a person being injured or killed by a Post Office van redress must be sought against the driver, but no action lies against the Postmaster-General as the Crown's agent, and any compensation he may offer is made purely as an act of grace.

In the House of Commons on February 17 the matter of the Crown and compensation for injuries arising from service vehicles was discussed on the motion for the adjournment, and the case was brought forward of a woman who was run down by an army lorry driven by a soldier. The woman had failed to obtain compensation. During the discussion the

ministerial reply to a supplementary Parliamentary Question was quoted, which stated that the principle adopted by all Government departments was that in circumstances in which if the Government had been a private employer it would have been legally liable for the torts of the driver, compensation was considered. That, of course, still leaves it at the discretion of the State as to whether any compensation is paid or not, and compares poorly with Parliament's own decree that every civil driver of a road vehicle must be possessed of third-party insurance The Lord Chancellor has said that a member of the public injured by the negligent driving of a service vehicle has a right to sue the driver of the vehicle and to obtain judgment against him for damage that he has suffered, but he has no right of action against the Crown as in law the Crown is not liable for the torts of its servants. It is true that if the driver of the service vehicle is on duty at the time of the accident it is the practice of a Government department to provide the funds required to satisfy any verdict obtained against the driver, but this does not, in fact, meet the criticism levelled against the system, since entire discretion is left with one of the interested parties. One is impelled to wonder what position might arise in the event of a serious railway accident if the railways were nationalised. If compensation were to be entirely a matter for the discretion of the State it would introduce an element which at best would be extremely undesirable.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Classification of Locomotives

Freeman's Farm,
Bardfield End Green,
Thaxted, Essex
March 7

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The system of locomotive classification suggested by Mr. Tuplin in your issue of March 6 represents an improvement on my original proposal in the sense that it is more easily written. There may, however, possibly be something to be said in favour of giving different factors symbols differing in form. I am not sure whether that is so or not.

The point with which I was concerned was the advisability of giving a meaning to any classification that may ultimately be decided on. I can see no use in a number that does not tell somebody something he may wish to know. To give a locomotive a number as you might call a boy John or Henry or Charles—merely because the name is available—is to make an unintelligent use of paint and time. The ideal identification mark will convey a maximum of information in a minimum of space.

Mr. Tuplin asks me why I group the 4-4-2 with the 4-4-0. Because the adhesion is similarly limited in each case. In any event, it is improbable that new locomotives of the Atlantic type will be built in this country.

May I add in conclusion that my effort was born in the need to fill up a wartime evening and was printed in the hope that others would improve on it.

Yours truly,
ASHLEY BROWN

"The Railway Gazette" in Argentina

Buenos Aires,
December 30, 1941

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am writing to settle my account for the renewal of my annual subscription. If it is not presumptuous I should like to congratulate you on the continued excellence of THE RAILWAY GAZETTE in spite of wartime difficulties; though the fact that it is true is unfortunate, your "debunking" of wishful thinking in connection with the German railways is most refreshing in this propaganda-ridden world and is typical of the balance and dignity of your journal.

Yours faithfully,
ARGENTINE RAILWAY OFFICER

PUBLICATIONS RECEIVED

Economic Control of Iron & Steel Works. By F. L. Meyenberg. London: Chapman & Hall Limited, 11, Henrietta Street, W.C.2. 8¾ in. × 5½ in. × 1¼ in. 332 pp. Price 25s. net.—An undue limitation of the scope of this book is perhaps indicated in its title, for the fundamental explanations are applicable to industrial works generally, but as the author's experience for the past twenty years has been drawn from the iron & steel trade, he has used this throughout as the basis of his exposition. Further, as his experience has been gained both in England and Germany, he is able to make detailed comparisons of the standard costing methods in both countries. The book is divided into five sections—Accountancy, Works Accounts, Job Accounts, Standard Costs, and the Organisation of Economic Control—each of which is exhaustively treated. Not all the author's conclusions will necessarily find general agreement, but, as is pointed out in a foreword by Sir William Larke, Director of the British Iron & Steel Federation, the value of his comparisons between British and Continental practice is that they stimulate a re-examination of our own methods. In particular, the book aims at that close co-operation between accounting, commercial, and production departments which is so essential to the efficient working of any productive organisation, and Sir William particularly commends it to those already in or aspiring to executive positions in industry, as well as the universities and technical schools as a basis of courses for the benefit of those seeking degrees in engineering or metallurgy.

The Modern Diesel. Sixth edition. 1942. London: Iliffe & Sons Ltd. Dorset House, Stamford Street, S.E.1. 7½ in. × 5 in. 238 pp. Illustrated. Price 5s. net.—The sixth edition of this useful guidebook has been considerably revised and contains information of recent date, in spite of certain restrictions on publication unavoidable in existing circumstances. The general principles of compression-ignition engines are well set forth, together with the leading features of the various ideas that have been developed by inventors and designers, and applied practically by manufacturers in various countries. The progress of the diesel principle in all branches of transport has been very marked in recent years and further important advances will undoubtedly soon be realised. A lengthy treatise would be necessary to deal with the whole subject from the point of view of detailed engineering design, but the present volume, which contains sections presenting illustrations and characteristic features of many types of engine, for all forms of service, enables its essentials to be grasped and facilitates further study by indicating the sources of manufacture of the principal products in this field. The illustrations, both line and half tone, are clear and well selected, and the book is admirably suited to its purpose.

The British Colonial Empire. By W. E. Simnett. London: George Allen & Unwin Ltd., 40, Museum Street, W.C.1. 7½ in. × 5 in. 249 pp. and 2 folding plates. Price 8s. 6d. net.—Within recent years the term "British Empire" has dropped out of use, to a large extent, excepting as a term of opprobrium by our enemies intending to connote nineteenth century imperialism. Rather from the British viewpoint are the many territories under the Crown regarded as units of the British Commonwealth of Nations, comprising all the self-governing Dominions. There is still left, however, the British Colonial Empire to which an increasing amount of attention has been directed by the present war. Nevertheless, public interest is considerably in advance of precise knowledge of the various units which make up the British Colonial Empire, totalling 40 territories throughout the world, covering 3,000,000 square miles, and containing populations totalling 65,000,000 of every race, colour, and creed. *The Crown Colonist*, one of our associated papers, has played no mean part in making known both at home and overseas the separate existence of the Colonial Empire, and Major Simnett, the author of the present volume, was its first Editor. With this book he has performed a useful and timely service in presenting clearly and succinctly brief historical outlines and descriptions of these territories:

XUM

THE SCRAP HEAP

BUREAUCRATIC ABSURDITY

A firm of solicitors writes to tell us that, due to quite unnecessary duplication of letters from a Government Department with which it was negotiating, it was obliged to correspond under the reference numbers DLA / C / HVC / P4871 / 71A / 71B / 72 / 72A / 73 / 73A / 73B / 74.

From "The National News-Letter."

* * * *

EASTER UNDER TWO FLAGS

The English Way

"Please do not travel unless it is absolutely necessary. No extra trains will be run"—Railway announcement.

The Nazi Way

"We categorically *request* you not to travel unless absolutely necessary.

"Disobedience will result in heavy punishment; in bad cases, concentration camps."—Goebbels and Nazi Transport Minister.

* * * *

ENGLAND "WILL NEVER BE AS RICH AGAIN"

"We realise we shall never be as rich in England as we were before—we do not mind that," said Mr. Harold Nicolson, M.P., Governor of the B.B.C., in a speech in Dublin recently. He also said: "A great seriousness has come over my country recently. 'We realise that our old Imperialism has gone and it has got to be remoulded. We realise in England that we may cease to be a unitary Power; we may become a member of a group of Powers. We realise that and we do not mind. The lion's tail has been so twisted that there is only about two-thirds left. He will come out of the struggle more modest, rather moth-eaten—a much nicer animal."—*From "The Evening News."*

* * *

HITLER AS PUBLISHER

Facts confirmed in London show Hitler to be a multi-millionaire. In his own name, in 1921, he formed a company called the Zentral Verlag, which acquired the business of another company, the Franz Eher, which, with the Zentral Verlag, has become what has been described as "the biggest journalistic and publishing racket the world has ever known." When started, it was stated, this was a very small thing, and Hitler was not then in power. The Zentral Verlag sold in 1926 10,700 copies of newspapers a day; the present output exceeds 16,000,000. Hitler was able to build up this organisation very largely through the confiscation of Jewish-owned newspaper, advertising, and publishing companies. By way of nominal compensation the State paid the Jewish owners a small sum, believed to be in the neighbourhood of 10 per cent. Then the Zentral Verlag paid to the State the equivalent of that compensation and thus acquired the whole vast business. This was not merely a piece of capitalist plutocracy but a racket. In fact, "a dirty swindle" was a fair description.—*From "The Star."*

* * *

We were recently handed a Stock Exchange investment list dated November 5, 1879, giving a selection of bonds and stocks on offer at the time of publication. Among the railway stocks were the following:—

DEBENTURE STOCKS

	Price	Yield £ s. d.
Midland 4%	108¾	3 13 6
Lancashire & Yorkshire 4%	108¼	3 14 0
North British 4%	103⅝	3 17 0
Furness 4%	104¾	3 16 6
Chatham 4½% B	113⅜	3 19 0
London & North West. 4%	109⅛	3 13 0
Great Eastern 4%	107	3 15 0
London, Chatham, & Dover 4%	102	3 18 6
London, Chatham, & Dover 4½% A	115½	3 18 0
Great Eastern 5% A	130	3 17 0
Great Western 4½%	112½	3 15 6
Glasgow & South Western 4%	103¼	3 17 6
Caledonian 4%	106	3 15 6
London & South Western 4%	109½	3 13 6

GUARANTEED AND NON-CONTINGENT PREFERENCE STOCKS

North British 4% Lien	100½	3 19 6
L. & N.W. Birmingham Canal 4%	104½	3 16 6
Caledonian 4% guaranteed	102	3 18 6
North British 4% No. 1	99¾	4 0 0
Great Eastern 4% guaranteed	103	3 17 6
North Staffordshire 5% Pref.	25½	3 19 0
London & North Western 4%	106½	3 15 0
City of Glasgow Union "F" (N.B. & G. & S.W.)	121½	4 2 6
Gt. Eastern Metro. Extension 5%	127½	3 18 6
Midland Metro. District 4% rent	104	3 17 0
N.E. West Hartlepool 4%	104	3 17 0
Great Western 5% guaranteed	129	3 17 6
Midland 4% guaranteed	106½	3 15 6
Great Eastern Blackwall 4½%	114½	3 18 6

CONTINGENT PREFERENCE STOCKS

London & N. Western 4%	104¼	3 16 6
Manchester Sheffield 5% 1876	117½	4 5 0
Great Northern 4½% 1877	111⅜	4 0 6
North British 4% No. 2	94½	4 4 6
Caledonian 4% No. 1	99¾	4 0 0
Great Eastern 4%	98½	4 1 3
Manchester & Sheffield 5% 1874	117	4 5 6
Brighton 5%	126	3 19 6
Lancashire & Yorkshire 4%	102⅛	3 18 0
Great Northern 4½% 1876	113	3 19 6
North Staffordshire 4½%	108	4 3 6
Gt. North. of Scotland 4½% B	97	4 12 6
N. British, Edin. & Glasgow 4½%	100½	4 9 6
Caledonian 4% No. 2	97⅜	4 2 0
South Eastern 5%	126½	3 19 0
Metropolitan District 5%	120½	4 3 0
Brighton 4%	102½	3 18 0
Do. 4½%	112½	4 0 0
North Eastern Blyth & Tyne 4%	102	3 18 6
Metropolitan 5%	126	3 19 6
Brighton 5%	126	3 19 6
Sheffield 5% 1872	119½	4 3 6

MISCELLANEOUS

L. & N. Western ordinary	143½	4 6 0
Gt. Northern Railway ordinary	123	4 5 6
N. Eastern Railway ordinary	142½	4 4 0
South Eastern preferred	141½	4 5 0
London, Brighton, & South Coast preferred	140½	4 5 6

The names in most cases have passed into history, but we were interested to note that Great Western 5 per cent. guaranteed, the price of which was given as 129 on November 25, 1879, was little changed at 129¾ on January 13, 1942, the day on which we received the list; and also that the old Midland 4 per cent. debenture stock, 108¾ in 1879 was little different from the L.M.S.R. 4 per cent. debenture which was 108 in 1942. Junior stocks, however, showed very wide disparities over the 63 years; for instance, if one accepts L.N.E.R. preferred ordinary standing at 3¾ as the equivalent of Northern Eastern Railway ordinary stock which was then 142½, one gets some indication of the varying fortunes of stockholders.

* * *

EARLY WAGGON-WAYS

The following are extracts from a catalogue of second-hand early railway literature recently issued by Grafton & Co. They are among the earliest known references to railways in Parliamentary proceedings:—

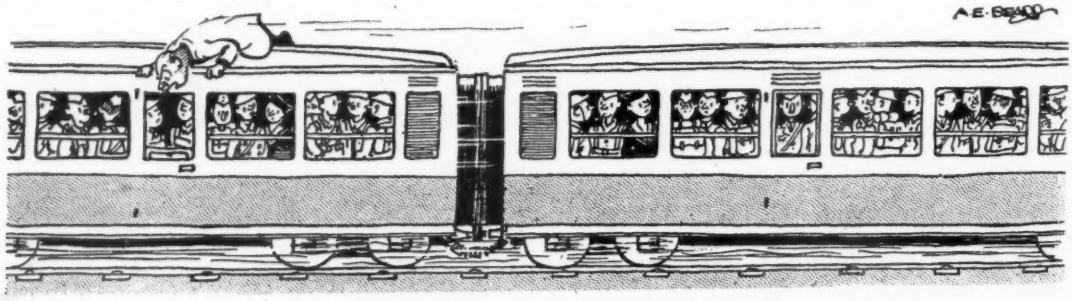
AN ACT for repairing the Road from Sunderland near the Sea, to the City of Durham, in the County of Durham. London, 1746. Folio, wrappers. The Trustees are not to interfere with any waggon-ways and new waggon-ways may be made. This is the first statutory reference to railways of any description.

AN ACT for repairing the High Road leading from the North End of the Cow Cawsey, near the Town of Newcastle upon Tyne, to the Town of Belford, and from thence to Buckton Burn, in the County of Northumberland. London, 1746. Folio, wrappers. The Act reserves the right to colliery owners to make and use waggon-ways in or across the road.

AN ACT for repairing the High Road leading from the City of Durham, in the County of Durham, to Tyne Bridge in the said County. London, 1746. Folio, wrappers. Trustees not to pull up, damage or obstruct any waggon-ways and the owners of such waggon-ways have all rights reserved to them both as to old and new waggon-ways.

AN ACT for repairing the Road from North Shields in the County of Northumberland, to the Town of Newcastle upon Tyne. London, 1749. Folio, wrappers. The Act reserves to colliery owners power to make and use waggon-ways across or along the road.

AN ACT for repairing the Road from the West Cowgate near the Town of Newcastle upon Tyne, through the West End of Kenton, Pont Eland, Higham-Dykes, Newham Edge, Belsay Mill, and South Middleton, to the North Side of the River Wanspeck, in the County of Northumberland. London, 1749. Folio, wrappers. The Act reserves to colliery owners the right to make waggon-ways along or across the road.



"I said, is THIS *the dining-car?"*

[*Reproduced by permission of the proprietors of "Punch"*

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

WESTERN AUSTRALIA

Coach Replacements

Four second class suburban coaches of an out-of-date type have been recently dismantled, and the salvaged underframes and certain other parts have been used in the construction of four new steel-bodied first class carriages. The new vehicles are of the centre-corridor type, each divided into three compartments and seating 50 passengers; they have the latest internal fittings and lighting, and are the first ordinary coaching vehicles to be painted externally with cream upper and green lower panels, like the diesel-electric and other self-propelled cars, instead of the standard red. Four of the older existing first class coaches have been transferred to second class.

New Trolleybuses for Perth

The need for additional trolleybuses for the Claremont and Wembley routes is to be met from an unexpected source. A year ago orders were placed in England for six chassis, but war conditions made it impossible to execute the order, and six small petrol buses were substituted; eight petrol-engined buses are for the same reason under construction for the South Perth service. The situation was later made worse by petrol restrictions, and inquiries were next made as to the possibility of buying American-built trolleybuses, but the price was prohibitive. Six diesel chassis of the Reo type, with 38-seater bodies, were then placed on order. The Government later received information that a number of trolleybus chassis which had been built at the Leyland works in England for the municipal authorities of Canton, China, were still on hand, delivery having been impossible due to the Japanese occupation, and was successful in placing an order for eighteen of these, which will be shipped as soon as conditions permit. The buses will be of the four-wheel instead of the six-wheel type, and the bodies, which will seat 38 passengers, are being constructed locally. On receipt, these buses will be used on the Claremont and Wembley routes; the new petrol-engined buses will inaugurate the South Perth route; and the diesel-engined buses will be used to open up new districts.

Inglewood Tramway

A new feeder cable has been installed between East Perth power-station and the Inglewood tramway. Some time ago the tramway was extended and additional cars were put on, without any amplification of the current supply, and as a result the service was slowed down and complaints were received both from passengers and from residents in neighbouring areas as to poor lighting and current shortage; also, through inadequate provision for return currents, the underground postal telephone and high-tension electric circuits in the vicinity suffered considerably from electrolysis. The new feeder cable has effected a marked improvement.

Modification of "P" Class Engines

The 4-6-2 engines designated "P" class of which the stock in Western Australia totals 35, were originally designed for a working pressure of 175 lb. per sq. in., with an axle load of 14 tons, but because of restrictions due to strength of certain bridges, the boiler pressure was reduced to 160 lb. per sq. in. and the axle load to 12·6 tons.

In recent years a programme of bridge strengthening has been carried out, and as a result it has been found possible on a number of lines to permit a greater axle load. Arrangements were therefore made with the 10 newest "P" class engines—which were placed in traffic in 1939—by an alteration to the springs, to provide for a 14-ton axle load, and so enable the full designed pressure of 175 lb. per sq. in. to be used. As a result the hauling capacity of the engines has been increased by 9 per cent., an increase which has been of considerable advantage in the haulage of the heavier passenger trains.

The satisfactory performance of these 10 engines after the alteration has resulted in consideration being given to the modification of further engines of the same class, and approval has been given to the conversion of a further ten of which three have been completed to date. The cost of the alteration is relatively small and is fully warranted by the results obtained. The additional power gained by the conversion can be said to represent one additional engine for each 11 converted, and this extra tractive power will be extremely valuable at the present time.

UNITED STATES

Modernising Pennsylvania Coaches

An important rolling stock modernisation programme is now being carried out by the Pennsylvania RR. in its own shops at Altoona, Pa. At a cost of approximately $3,500,000, 100 passenger coaches are being renovated; the changes include streamlining, tight-lock couplers, and rubber draft gears, wide double windows, insulation against extremes of temperature, and the new type of cast steel bogie frame with roller bearings. Fifty of the cars will be adapted for long distance service with reversible and adjustable reclining seats; they will seat 68 passengers apiece and have spacious luggage compartments for the storage of bulky hand baggage. Ten further cars will be combined passenger and baggage cars; half devoted to baggage storage, and the remainder seating 36 passengers. For the high-speed electric services between New York, Philadelphia, Baltimore, and Washington, thirty of the cars are being equipped with high-backed rubber-cushioned reversible seats for 80 passengers each; the remaining ten will be combined passenger-baggage cars for the same service, seating 40. Delivery of the reconditioned stock is expected to begin in April and to be completed in time for the summer service. Fifteen additional electric passenger locomotives are also on order.

New York Central Punctuality

On January 8 an inquiry was conducted by the New York Public Service Commission into the passenger services of the New York Central System, against which certain complaints had been levelled. It was found that a number of the alleged defects had been remedied, but that punctuality still left something to be desired; in this connection it must be remembered that the standard of passenger service punctuality in the United States is always high, and also that it may have suffered more on the N.Y.C. than elsewhere due to the immense loads that this company has been accustomed to handle over its principal main line with unassisted "J3" class Hudson locomotives. This winter, during the worst weather, the famous Twentieth Century Limited, 16-hr. extra-fare train between New York and Chicago, has been running in two sections, and the 17-hr. all-coach Pacemaker at times in three, in order to keep loads within bounds in the interests of timekeeping.

Grain Elevator Explosion

On January 10, following two explosions, a grain elevator at Superior, Wis., containing 1½ million bushels of wheat, was destroyed by a fire which also threatened the ore and wheat dock area. The elevator was the property of the Great Northern RR., and the damage is estimated at 2½ million dollars; the cause may have been sabotage, but more probably accidental ignition of grain dust was responsible. The explosions were felt some miles away, but only seven persons were injured. The firemen kept the fire away from adjacent elevators and from a storage depot nearby containing 16 million gallons of petrol.

Rebuilding a New Jersey Pier

Permission has been granted the Pennsylvania RR. for the rebuilding of the stockyards at Jersey City, N.Y., which were partly destroyed by fire in May, 1941. A new reinforced concrete pier, 1,314 ft. long and 139 ft. wide, will replace the old timber pier, and 126 fireproof pens will replace those that were lost in the fire; the work has been begun and is expected to be complete by September. The stockyard, which is in the north-east section of Harsinus Cove yard, at Sixth Street and North River, is the distributing point serving importers in New York harbour who consign their livestock to New York *via* the Pennsylvania RR.

SWEDEN

State Railways Earnings

There was a large increase during 1941 in gross earnings, amounting to Kr. 437 million, partly due to an increase of 10 per cent. in the tariffs for both passengers and goods from July 1, 1940, and also to an increase in traffic and the absorption of a number of private railway companies in the State Railway system. The increase on 1940 was Kr. 76 million, almost exactly the same as from 1939 to 1940, when the increase amounted to Kr. 78 million and gross earnings were Kr. 361 million.

Goods traffic rose by Kr. 48 million (total earnings Kr. 270 million) and passenger traffic rose by Kr. 28 million (total Kr. 153 million).

Total expenditure (which in 1940 rose by Kr. 56 million to Kr. 267 million from Kr. 211 million in 1939), amounted in 1941 to Kr. 321 million, an increase of Kr. 54 million on 1940. This figure includes Kr. 44 million assigned to the State Railways' renewal fund. Here again expenditure was influenced by the extension of the State Railway system to lines previously run by private companies.

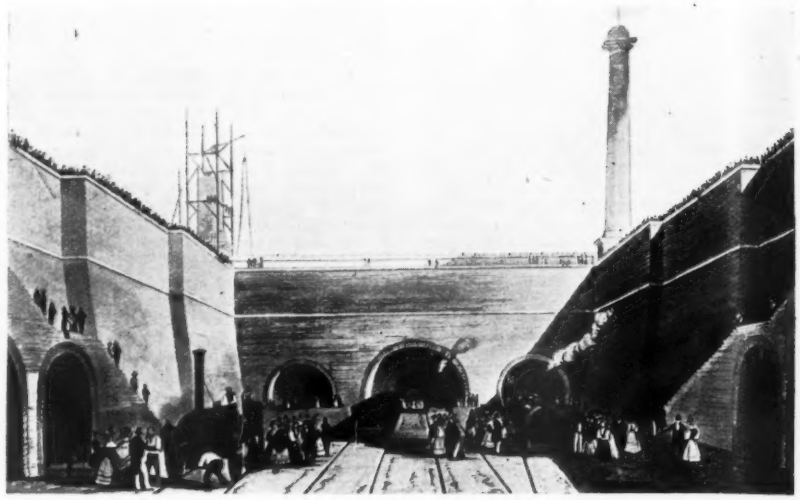
The difference between gross earnings and gross expenditure was Kr. 116 million, compared with Kr. 94 million in 1940 and Kr. 72 million in 1939. A net surplus of Kr. 77 million, compared with Kr. 59 million in 1940, is obtained after deduction of interest, at the rate of 3·84 per cent., on an estimated borrowed amount of Kr. 1,007 million invested in the State Railways.

The final annual report of the private railways for 1941 is not yet available; the latest figures published are for November. For the period January-November there was a total net profit for all the companies together of Kr. 17·82 million, against Kr. 18·95 million for the same period in 1940.

MAIN-LINE CABLE HAULAGE AT LIVERPOOL IN 1831

(See illustrations on facing page)

IN an article published at page 532 of our November 21, 1941, issue on cable haulage on main lines, we pointed out that, although the operation of railways by cables hauled by stationary engine is a practice of considerable antiquity, and is still used extensively in many parts of the world on steeply-graded mineral lines, examples of such working of sections of main-line railways are comparatively scarce. Among the outstanding examples in England are those provided by the termini at Liverpool, and we reproduce herewith four of the Ackermann hand-coloured aquatints of 1831 which show the haulage cables. The Crown Street passenger station was in use for the short period from 1830 to 1836, when it was replaced by Lime Street, but cable operation from Lime Street to Edge Hill continued until March, 1870. For goods traffic, cable operation in the Liverpool neighbourhood continued until the closing years of the nineteenth century. The original Liverpool goods station was at Wapping, which was reached from Edge Hill by a tunnel about 1½ miles long on a falling gradient from Edge Hill of 1 in 48. Stationary engines at Edge Hill, one on each side of the Moorish Arch originally built there, were employed to haul the traffic up to Edge Hill by means of an endless rope. At first a hempen rope was used, and the maximum load was six wagons each averaging about 4 tons 10 cwt. including the weight of the wagon, or a total of 27 tons. No brake van was used, and the man in charge had to ride on the front wagon holding the "messenger," a short rope secured to the travelling rope. It was soon found necessary to replace this hempen winding rope by one of steel, and to erect at the easterly side of the tunnel road stronger stationary engines. Pilot wagons were provided to travel in front of the up traffic, and the permissible train length was increased to 16 vehicles. The Wapping tunnel rope was superseded by locomotives on May 11, 1896. Another tunnel west of Edge Hill which was cable-operated for many years was that serving Waterloo goods station. Waterloo tunnel, about a quarter of a mile long, runs from Great Howard Street to Byrom Street, and was opened in August, 1849. Goods traffic from Waterloo Station to this point was worked by locomotive engine, and thence by endless steel rope and stationary engine *via* Victoria tunnel to Edge Hill. The Victoria tunnel rope broke on February 16, 1895, and since then the traffic has been worked by locomotives.



"Entrance of the railway at Edge-Hill, Liverpool"

One of the Ackermann aquatints, published in February, 1831

REINFORCED-CONCRETE SLEEPERS IN HONG KONG

For more than 20 years reinforced-concrete sleepers have been in use on the British section of the Canton-Kowloon Railway, Hong Kong, and some information has reached us recently concerning the experiences of the administration of that railway during the past decade. The type of sleeper in use was designed by Mr. Robert Baker, formerly Manager & Chief Engineer of the railway, and supplies were made between the years 1918 and 1934. The numbers manufactured during this period for experimental purposes were: 1918-1919, 150; 1921-1925, 7,567; 1925-1926, 100; 1928-1934, 34,659; a total of 42,476. The numbers of concrete sleepers remaining in the track in May, 1941, were as follow: On the main line, 25,619; on sidings, 10,594. During the past ten years, 3,287 of these sleepers were broken, of which 1,745 were repaired and 1,542 could not be repaired. The figures are analysed in years as follow:—

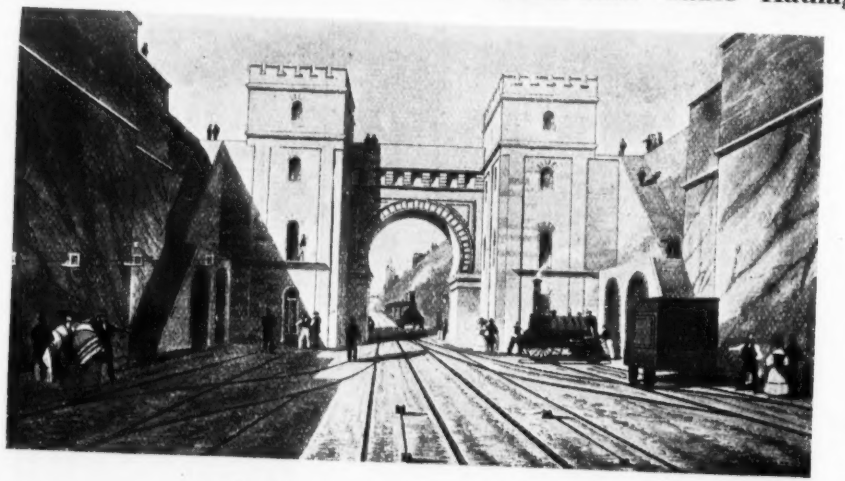
	Reparable	Irreparable	Total
1931	145	114	259
1932	188	62	250
1933	191	22	213
1934	145	141	286
1935	134	265	399
1936	274	533	807
1937	174	75	249
1938	353	201	554
1939	104	26	130
1940	37	103	140
	1,745	1,542	3,287

These sleepers were made by native labour, and native methods were employed. No machinery such as vibrators, screens, or concrete mixers, was used. The locomotive department of the railway has expressed the opinion that the wheels of the rolling stock have suffered additional wear from the time these concrete sleepers were introduced. More frequent packing of the track has been found necessary with the concrete sleepers than with timber. Experience during the past 20 years has shown that the life of the concrete sleeper is dependent to a very large extent on the care taken in manufacture, the method of transport, and the care in laying and packing. In some cases cracks have appeared shortly after the sleepers have been laid, due to unevenness of packing.

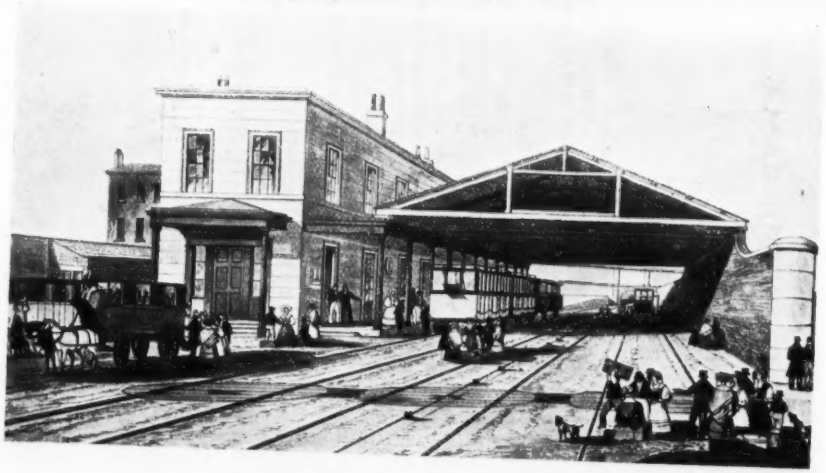
ECONOMY IN USE OF ENVELOPES.—The Post Office states that about 80 per cent. of the letters handled by it are still enclosed in new envelopes. The Waste Paper Recovery Association Limited wishes it to be known as widely as possible that it is essential that present stocks of envelopes should be used with the greatest economy and that they should be reserved for registered letters, mail going abroad, and the few other occasions when used envelopes, in conjunction with an economy label, cannot be used. Stationery manufacturers have been cut to 15 per cent. of their pre-war tonnage and when present stocks of envelopes are exhausted, it will be extremely difficult to buy new supplies. From the patriotic point of view economy labels are well worth while. If an envelope has been used once only, 50 per cent. of the new fibre, which would be needed for a new envelope is saved. Most envelopes can do three or four journeys before being added to the salvage collection.

XUM

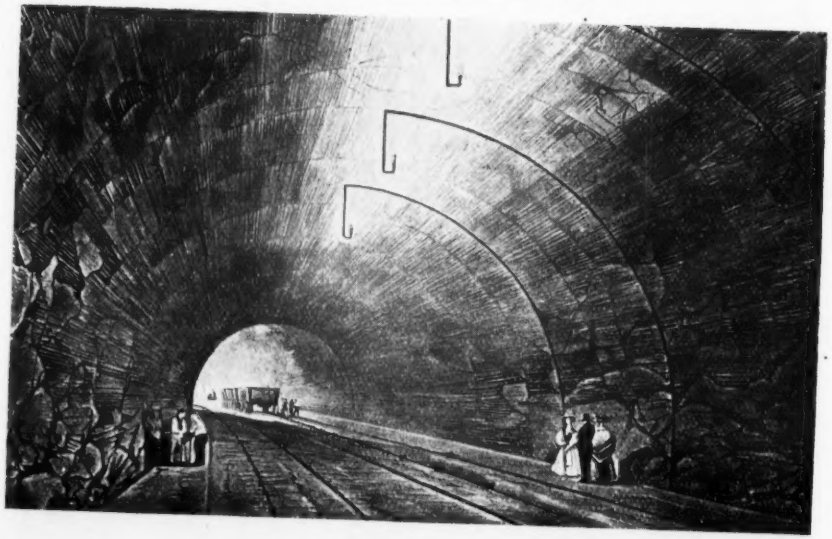
Main-Line Cable Haulage at Liverpool in 1831



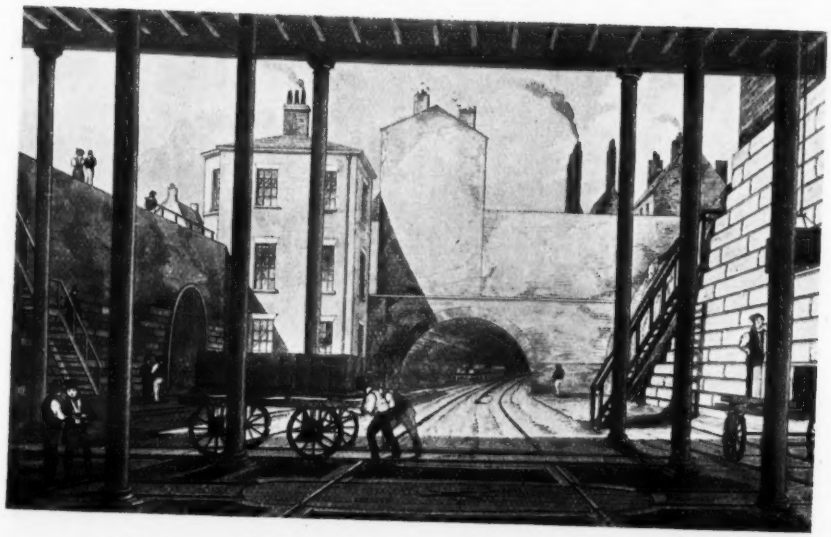
"Moorish Arch, looking from the Tunnel"



"Railway Office, Liverpool"



"The Tunnel"



"Warehouses, &c., at the end of the Tunnel towards Wapping"

Cable haulage at the Liverpool end of the Liverpool & Manchester Railway as depicted in the famous Ackermann hand-coloured aquatints of 1831. The "Railway Office, Liverpool," which shows Crown Street Station, is in its original form; the view was reissued in 1833 with a number of differences. The view entitled "The Tunnel" was issued originally with a locomotive in the distance, but was reissued in the form here shown, with trucks instead of a locomotive, and with hauling ropes added

STEAM DISTRIBUTION AND LOCOMOTIVE PERFORMANCE

Some comparative notes on modern American and British practice in valve-gear layout

By O. S. NOCK, B.Sc., A.M.I.Mech.E.

DURING the past fifteen years there has been in this country a growing realisation of the importance of front-end design; several famous types have had their valve gear modified by provision of longer laps and increased travel, while in new designs valve-travel has varied between 5¾ in. and 7 in. instead of the previous range of 4 in. to 5 in. Yet there is still a great diversity in British practice, and in so important a part of the locomotive any analysis that brings fresh light on to the matter is deserving of close study. In the October, 1941, issue of our American contemporary *The Railway Mechanical Engineer* Mr. J. L. Ryan, Mechanical Engineer of the St. Louis-San Francisco Railroad, contributes an article on the effect of steam distribution on locomotive performance, with particular reference to the influence of the steam lap. That the diversity of practice is at least as great in the U.S.A. as it is here will be evident from the following table of valve data, all relating to locomotives of recent construction.

VALVE DATA OF RECENT AMERICAN LOCOMOTIVES

Type	Coupled wheels dia.	Boiler pressure	Cyl. dia.	Valve dia.	Valve travel in full gear	Max. cut-off	Steam lap	Lead
	ft. in.	lb. per sq. in.	in.	in.	in.	per cent.	in.	in.
4-4-4 ...	6 8	300	17½	9	6½	84	1¼	¼
4-4-2 ...	7 0	300	19	10	6½	84	1⅛	¼
4-6-4 ...	6 8	300	22	11	7½	84·5	1 7/16	7/16
4-6-4 (*a*) ...	6 7	275	22½	14	8⅛	82	1⅝	¼
4-6-4 ...	7 0	300	23½	13	7	86·6	1⅛	5/16
4-6-4 (*b*) ...	7 0	300	23½	12	7½	84	1 7/16	7/16
4-6-4 ...	7 0	300	25	14	7⅞	72·6	1⅞	7/16
4-8-4 ...	6 3	275	25½	14	7	87·5	1⅛	¼
4-8-4 ...	6 2	250	28	14	8	78·5	1⅜	5/16
2-10-4 ...	5 9	260	29	14	9	80	1 1/16	7/16
2-10-4 ...	5 10	310	27	14	7½	85	1 7/16	½

In general it will be seen that American locomotives are given a considerably longer cut-off in full gear than is customary in Great Britain. The need for this can be readily appreciated in types designed for working over the Rocky Mountains, where full regulator and full gear are regularly used; but it is less easy to understand on a high speed locomotive. The 4-6-4s indicated by (*a*) and (*b*) in the table provide a most interesting contrast: (*a*) having 1⅝ in. lap, and 8½ in. travel in full gear, is the New York Central "J-3a" class, engaged on very heavy express work between New York and Chicago; (*b*) is the Milwaukee streamlined "Hudson" class, specially designed for the Hiawatha high-speed service. In the latter engines the valve-travel is 7½ in. with a comparatively short lap of 1 5/16 in.

These two examples are fairly characteristic of modern American practice. For ultra-high-speed locomotives designers would appear generally to be reluctant to use long laps and long travels, echoing the one-time reluctance of British engineers to adopt the principles so ably pioneered by Churchward on the Great Western Railway. In the U.S.A. the recent trend has been towards shorter valve travels, on engines like the Milwaukee "Hudsons," in order to lessen the effects of inertia at high speed, and to minimise valve-gear maintenance troubles. On this subject Mr. Ryan, in the article previously mentioned, writes:—

"To remove to the extent reasonably possible the restrictions in the steam distribution in our locomotives at the shorter cut-offs the following procedure would be effective in the right direction: (1) Valves of lightweight construction using bronze valve rings preferably of a sectional type; (2) refinement in the design of the valve gear parts, using steels having higher physical properties making an exception of the material in the eccentric rods that are subject to shop adjustment; (3) the providing of more liberal areas in the bearing comparable with the high-speed service requirements. Preferably the application of roller bearings as the elimination of the play inherent in friction bearings greatly reduces the shock load on the valve gear; and (4) large diameter of eccentric-crank fit on the main pin with a key having increased proportions."

But it is clear from the remarkable work done on the Milwaukee road, and elsewhere, that short-lap valves as used in America do not have the hampering effect upon running that has been proved on certain British types of 1910-1925 vintage. With the (*b*) 4-6-4s in the table, speeds up to 120 m.p.h. have been recorded. That, however, is not to suggest that the best results possible have already been attained; the following striking example is quoted by Mr. Ryan of the effects of using a long steam lap. In this example the valve travel and the lead are not changed, and by increasing the lap from 1¼ in. to 1 15/16 in., the increases in exhaust port area are 50·7 per cent. at 25 per cent. cut-off, and 53·3 per cent. at 50·4 per cent. cut-off. Such increases speak for themselves.

A table is next included showing the corresponding valve data of certain well known British locomotives. In contrast to American practice the longest valve travel of all is found on a class designed pre-eminently for high speed, the

VALVE DATA OF BRITISH LOCOMOTIVES

Type	Railway	Class	Coupled wheel dia.	Boiler pressure	Cyl. dia.	Type of motion	Valve dia.	Valve travel in full gear	Max. cut-off	Steam lap	Lead
			ft. in.	lb. per sq. in.	in.		in.	in.	per cent.	in.	in.
4-4-0	G.N.R. (Ireland) ...	"S"	6 7	200	19	Stephenson ...	6	4 1/64	72	1 5/32	3/32
4-4-0	L.N.E.R. ...	"D.16/3" ...	7 0	180	19	Stephenson ...	9½	6⅜	72	1 13/16	—1/16
4-6-0	G.W.R. ...	"Saint" ...	6 8½	225	18½	Stephenson ...	10	6½	77·5	1⅜	—1/16
*4-6-0	L.N.E.R. (ex G.E.R.) ...	"B. 12" ...	6 6	180	20	Stephenson ...	10	4 7/16	72	1⅛	0·1
†4-6-0	L.N.E.R. ...	"B. 12/3" ...	6 6	180	20	Stephenson ...	9½	6 7/16	70	1 3/16	—0·078
4-6-0	L.M.S. ...	"5PSF" ...	6 0	225	18½	Walschaert ...	10	6½	75	1½	¼
*4-6-2	L.N.E.R. (ex G.N.R.) ...	"A 1" ...	6 8	180	20 (3)	Gresley-Walschaert	8	4 7/16	65	1¼	1/16
†4-6-2	L.N.E.R. ...	"A 1" ...	6 8	180	20 (3)	Gresley-Walschaert	8	5⅜	65	1⅛	¼
4-6-2	L.M.S. ...	"Coronation"	6 9	250	16½ (4)	Walschaert ...	9	7 3/32	75	1¼	¼

* As originally built † As rebuilt with long-lap valves

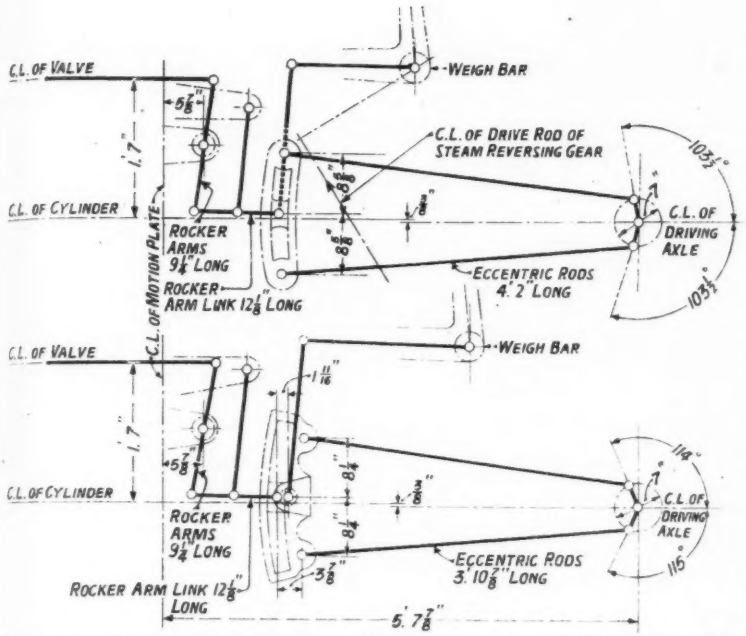


Diagram showing general arrangement of valve-gear on ex-G.E.R. 4-6-0s Class B.12, above, and below, modified gear on L.N.E.R. Class B.12/3. The comparatively small changes, to obtain greatly improved performance, will be apparent

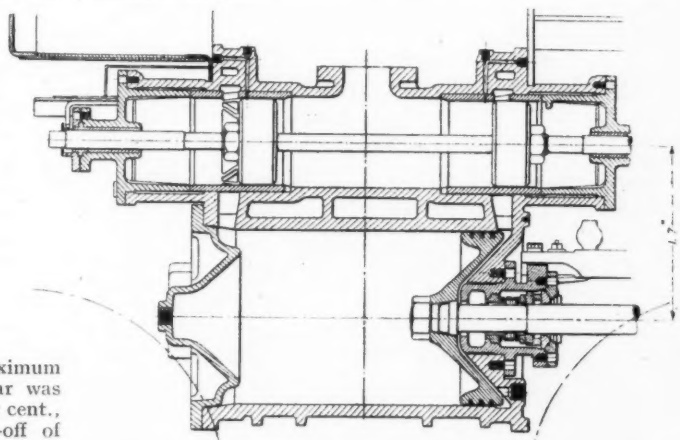
"Coronation" class streamlined Pacifics on the L.M.S.R. In view of Mr. Ryan's advocacy of longer laps the figures relating to the Gresley Pacifics of the L.N.E.R. are of particular interest; whereas in the American example maximum travel was not increased, and the cut-off in full gear was consequently shortened from 89·7 per cent. to 77·3 per cent., on the L.N.E.R. the already short maximum cut-off of 65 per cent. was retained and the valve travel increased from 4⅛ in. to 5¾ in. The valve setting of the Stanier 6 ft. mixed traffic 4-6-0s is of interest when studied in comparison with that of the high-speed Pacific engines belonging to the same railway.

EFFECT OF WIDE STEAM LAP

	Dimensions	
	With short lap	With long lap
Steam lap	1¼ in.	1¼ in.
Valve dia.	14 in.	14 in.
Valve travel in full gear	8⅜ in.	8⅜ in.
Max. cut-off	89·7 per cent.	77·3 per cent
Lead	7/16 in.	7/16 in.
Exhaust clearance	Nil	Nil
Exhaust port area (end of stroke)	48·8 sq. in.	71·6 sq. in.
At 25 per	cent. cut-off	
Valve travel	3·09 in.	4·65 in.
Admission port area	10·1 sq. in.	13·2 sq. in.
Exhaust port area	52·5 sq. in.	79·1 sq. in.
At 50·4 per	cent. cut-off	
Valve travel	3·75 in.	5·75 in.
Admission port area	21·2 sq. in.	31·9 sq. in.
Exhaust port area	63·8 sq. in.	97·8 sq. in.

The modification to the gear of the Holden 4-6-0s of the former Great Eastern Railway, now L.N.E.R. Class "B12," is shown in the adjoining figures for Class "B12/3." This introduces the Stephenson link motion, with its characteristic of increased lead with reduced cut-off. The gear of the "B12/3" engines closely resembles that of the G.W.R. two-cylinder "Saint" class 4-6-0s, which have 0·15 in. negative lead in full gear, and 0·12 in. positive lead when linked up to 25 per cent. cut-off. By common consent the G.W.R. "Saints" are highly successful engines, and in view of the advantages to be derived from a variable lead it is perhaps significant to recall that in one recent American locomotive design of high tractive effort a special arrangement is provided for automatic variation of the lead, on the Walschaerts gear. These latter engines are some articulated 4-6-6-4s belonging to the Denver & Rio Grande Western; they were built for fast freight service, and have four cylinders each 23 in. dia. by 32 in. stroke and 5 ft. 10 in. coupled wheels. The piston valves are 14 in. dia., having steam laps 1¾ in. long and a travel of 7¼ in. in full gear. The lead is variable from zero in full gear to ⅜ in. at 25 per cent. cut-off.

With the gradual speeding up of all traffic and particularly in America, of heavy freight trains, the capacity of a locomotive at high speed has become of far greater importance than nominal tractive effort, and it is at high speeds that long-lap valves have been proved to have so profound an effect upon the cylinder performance. At the same time there is a growing tendency in America towards general service locomotives; of these the New York Central Class "L-3a" 4-8-2s provide an interesting recent example. On these the diameter of the driving wheels is 5 ft. 9 in., and with cylinders 25½ in. dia. by 30 in. stroke 14-in. piston valves are provided having a steam lap of 1 9/16 in. Baker valve-gear is used. But of all American developments in this direction the trial of a gear with variable lead, on the Denver & Rio Grande Western would seem to be the most significant; while lead is necessary for the fast running, it is certainly not necessary when working very hard, at slow speed, on a late cut-off, for with negative, or no lead, compression occurs later in the return stroke of the piston, and greater power is obtained through increased area at the heel of the indicator diagram.



Cylinder and valve layout on L.N.E.R. Class D16/3 4-4-0s fitted with 9½ in. dia. piston valves; this reconstruction of the famous "Claud Hamilton" class 4-4-0s of the former G.E.R. provides a good example of locomotive rejuvenation

DORMAN LONG & CO. LTD.—Lord Greenwood, Chairman of the company, presiding at the ordinary general meeting on March 26, said that it was estimated that the total cost to the company to September 30, 1941, under the provisions of the War Damage Act, 1941, might amount to as much as £22,000, but it was hoped that the Government might give the iron and steel industry more equitable treatment. Iron and steel producers were required to make payments on a very different footing from public utility companies, but if the experience now available was taken into consideration, together with the effect of such large payments on the liquid position of concerns in the iron and steel industry, suitable adjustments might be provided in the War Damage (Amendment) Bill now being drafted.

RAIL BRAKES FOR SHUNTING YARDS

New hydraulic type on the French National Railways

SEVERAL marshalling yards on the French National Railways have been equipped during the last few years with the latest appliances for speeding up shunting operations and reducing costs. The Trappes yard was described in our issue for February 2, 1934, with particular reference to the ingenious Lévi type ball operated power frame, for controlling the setting of points during the descent of wagons from the hump. Frölich hydraulic rail brakes are used in that yard, and were also adopted at Sotteville. The latest yard to

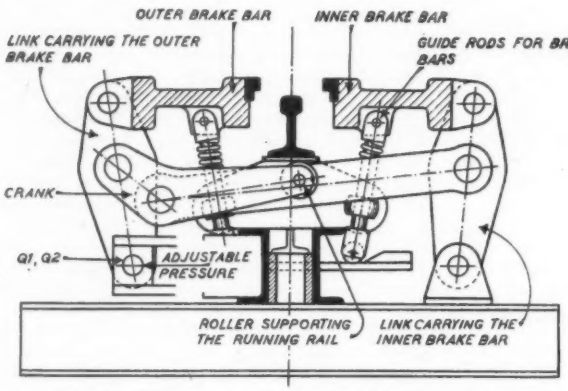


Fig. 1—Showing construction of Marchais rail brake

be modernised is that at Rennes, where the ball frame has again been applied, but the rail brakes are of a type designed by Monsieur Marchais, an engineer in the Permanent Way Department, manufactured by the Etablissements Saxby at Creil (Oise), following trials lasting over two years at the Vernouillet yard. The accompanying figures, taken from the *Revue générale des Chemins de fer*, will enable the principles of this apparatus to be understood.

The Marchais brake is hydraulically operated, and the braking effort is made proportional to the weight of the wagons. Fig. 1 shows the apparatus when normal, and Fig. 2 is a diagram of the mechanism. The rails rest normally on a fixed stop, through the medium of a girder, but they can be raised by rollers through sets of toggle motion placed at intervals of 2·40 m. (7 ft. 10½ in.) along the brake.

The rollers are carried on the ends of obtuse angled cranks, the opposite ends of which are connected to the links controlling the outer brake bars, their fulcrums being situated on links connected to the inner brake bars. These latter

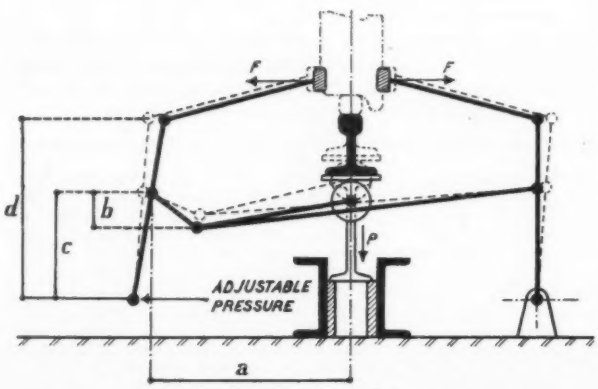


Fig. 2—Principles of action of Marchais rail brake

links rest in a fixed support at the bottom, but those of the outer bars rest on a support which can be moved horizontally from an hydraulic cylinder. Spring loaded supports are also provided for the brake bars.

When there is no wheel in the brake, the parts assume the position given in full lines in Fig. 2, and the bars approach within 125 mm. (nearly 5 in.) of each other. A wheel, in opening the bars, moves the system as shown in dotted lines, and the rail rises.

For the articulation of the outer bar to remain fixed when a wagon passes, its weight P must give rise to a lateral effort in each of the brake bars equal to $F = P \times \frac{a}{b} \times \frac{c}{d}$. The ratio F to P is about 4 to 1 in the Rennes brakes; *i.e.*, for 1 ton on the rail there is a brake bar effort of 4 tons on the wheels.

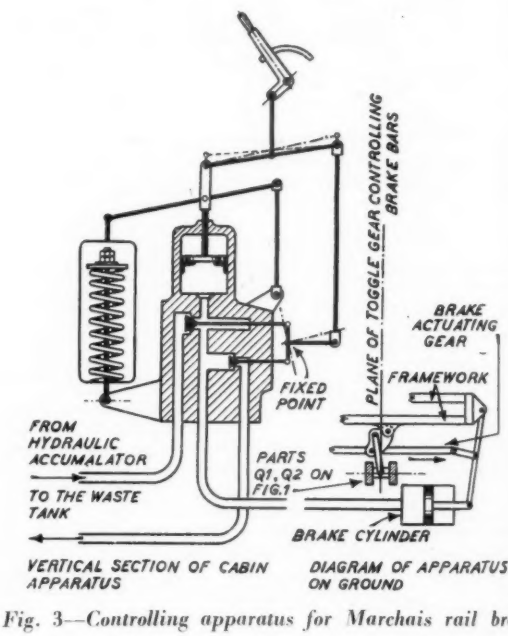


Fig. 3—Controlling apparatus for Marchais rail brake

Should these rise from the rail for any reason, the pressure on the bars ceases and they release, allowing the vehicle to fall. The bars, being normally above rail level, are ready to work at any moment.

The foregoing proportion between F and P is, of course, obtained only if the hydraulic cylinder exercises such a force as to keep the fulcrum of the outer link practically steady, and by varying this any lesser braking effort can be obtained at will. When this occurs the toggle motion no longer assumes the dotted position, but the left-hand link moves to the right a distance corresponding to the tyre thickness. Hydraulic control had been adopted, after exhaustive experience at Vernouillet, as being the best for the purpose, although electric apparatus was used there at first.

Fig. 3 is a diagram of the system of control. The accumulator is composed of reservoirs with a total capacity of 400 litres (88 gallons) at a pressure of from 90 to 110 kg. (198 to 222 lb.). Eighty litres (17·6 gallons) suffice for 9 brake operations. There are two motor-driven pumps of 20 horsepower and 60 litres (13·2 gallons) output at 100 to 110 atmospheres (1,470 to 1,617 lb. per sq. in.). Their control is entirely automatic. The brakes are lubricated on the Tecalemit system and are controlled from small levers in the cabin.

ELECTRIC TRACTION SECTION

Electric Locomotive Riding

IN a paper entitled "Notes on the Dynamics of Electric Locomotives," published in the 1941 volume of the Journal of Applied Mechanics of the American Society of Mechanical Engineers, B. S. Cain develops the energy method of calculating the critical speed of electric locomotives (above which the locomotive can sustain steady oscillations) to cover the effect of wheel coning and to study the possible motion at speeds above the critical. In general, the author considers that coning of the treads reduces the calculated critical speed of the locomotive by only 8 per cent. or less for large wheels, and that the coning has no appreciable effect on the oscillations of large locomotives, for which the value of the critical speed is a controlling factor. Energy gain from rough track is also estimated in the paper, and an alternative method is outlined in which the flange forces are assumed to be sinusoidal, with equivalent stiffness factors. Charts are given to show the general similarity in shape and reasonable closeness of numerical agreement between actual measured lateral stresses and the calculated values using the author's method applied to five locomotive types. A worked-out example is given of a large 2-Co-Co-2 locomotive and this shows how relations between flange forces and frequency of oscillation of practical value in designing can be obtained.

Recent Progress of Electrification in Brazil

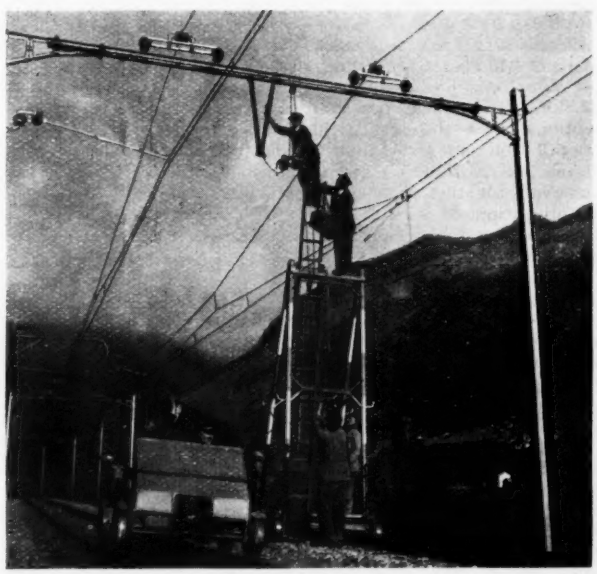
OF the total length of Brazilian railways, only 699 km., or 2·5 per cent., were electrified in 1940. The Central Railway accounted for 188 km. of this total with the sections electrified between Dom Pedro II and Nova Iguassú, and Deodoro and Bangú. The lines between Nova Iguassú and Saudade, and Bangú and Campo Grande are in course of conversion from steam to electric traction. For the supply of energy the Central Railway has two sub-stations at Mangueir and Deodoro, and each is equipped with three 2,500-kW rectifier units. In 1940 consumption totalled 42,235,000 kWh., which cost 2,877 contos of reis, or $068 reis per kWh. A total of 146,323 trains on the electrified sections carried 77,597,893 passengers. In the State of São Paulo the Paulista company has 331 km. of line electrified, made up of the double track between Jundiai, and Campinas, and single track thence to Rincão. Here some 45 electric locomotives together ran 4,459,968 km. in 1938 consuming 69,469,275 kWh at an average cost of $050 reis a kWh. The Rede Mineira de Viação has 181 km. of single-track electrified line between Barra Mansa and Andradina. In addition to these electrified lines there are also the smaller railways known as the Estrada de Ferro de Campos de Jordão, between Pindamonhangaba and Campos do Jordão, and the Corcovada Railway in the town of Rio de Janeiro.

The World's Busiest Main Line

IN these days of vastly increased wartime traffic in North America, the administration of the Pennsylvania Railroad may well congratulate itself on the foresight that led to the electrification of its main line between New York and Washington. Linking as it does the commercial and administrative capitals of the United States, and tapping *en route* the great cities of Philadelphia and Baltimore, there can be little doubt that this is the busiest main line of its length in the world, especially the section between New York and Philadelphia, which also carries the heavy traffic to and from the Middle West. Few railways, too, have made better use than the Pennsylvania of their electrification possibilities in the realm of speed. Between New York and Washington, which are 224½ miles apart (almost precisely the same distance as London to Plymouth), there are now 70 express trains daily, equivalent to a half-hourly service in each direction for 17 hr. of each day. Of these 58, ranging in journey time from 3 hr. 35 min. to 4 hr. 10 min., average 3 hr. 57 min. for the run, which works out at an overall speed of 56·9 m.p.h. including, in almost all cases, at least six intermediate stops. The point-to-point timings are very fast, and despite the dense occupation of the route, running speeds of 80 to 90 m.p.h. are common. It is of interest that one train—Advance No. 107, which leaves New York at 1 a.m. with twenty mail and express cars and does not convey passengers—is booked non-stop over the 224·6 miles to Washington in 3 hr. 55 min.; this is the longest regular non-stop run in the world with electric power.

Swiss Railways in Wartime

THE internal train services of Switzerland still remain less seriously affected by war conditions than those of any other country in Europe, almost entirely by reason of the high percentage of mileage worked with electric traction—a matter to which we have directed attention on more than one occasion in these columns. The winter railway timetables which came into force on October 6, 1940, included drastic curtailment of steam-operated services, due to the unsatisfactory state of coal imports, but traffic over the electrified lines remained unrestricted. While naturally the tourist traffic of Switzerland is at present greatly reduced, it should not be overlooked that Switzerland is also an important manufacturing country, and difficulties of coal supply would result in severe inconvenience were it not for the fact that power from hydro-electric stations is available. Since the outbreak of war the diesel services of the Swiss Federal Railways, namely, those on the Palézeieux—Lyss and Stein—Koblenz—Eglisau lines, have been gradually reduced as a result of fuel shortage, and since the introduction of the new timetables in October last, there has been no diesel operation at all. Industrial demands on electric power (doubtless heavy by reason of the demands of the German war machine) have now reached a stage when even electric train services are being affected. On February 13, the Minister of Posts & Railways announced that because of a shortage of electric power all Swiss sports trains were to be cancelled; we understand that 48 trains have been withdrawn.



Maintaining overhead conductors on the Swiss Federal Railways

Of the Swiss Federal Railways 1,335 route miles are electrified on the 1,500-volt single-phase, a.c. system, at 16⅔ cycles. The work of electrification was begun in 1906, and the bulk of the traffic is now conducted electrically

More Electrification in Switzerland

The Brünig line of the Swiss Federal Railways has recently been converted to electric working, and the 18½-mile private Biere-Apples-Morges Railway is being electrified. Both are metre gauge

CONVERSION of the 73·8-km. (45¾-mile) Brünig line, the only metre-gauge section of the Swiss Federal Railways, has now been completed between Lucerne and Meiringen. The first electric motor-coach has been running since early August, but the official inauguration of electric traction took place on November 18, three additional motor-coaches having been placed in service. The remainder will be delivered in the course of this year, and meanwhile steam engines will continue to work a portion of the traffic. Conversion is still proceeding between Meiringen and Interlaken and should be completed by the spring of 1942.

A detailed account of this line appeared in our issue of June 17, 1938, on the occasion of its jubilee. It may be briefly recalled that the section from Alpnachstad to Brienz was opened on June 14, 1888, the Lucerne-Alpnachstad portion on June 1, 1889, and finally the Brienz-Interlaken extension on August 23, 1916. Between Giswil and Meiringen there are four rack sections on the Riggenbach system, totalling 9 km., but the remainder of the route is comparatively easy. The maximum gradients are 12 per cent. (1 in 8½) on the rack and 2·5 per cent. (1 in 40) on adhesion sections.

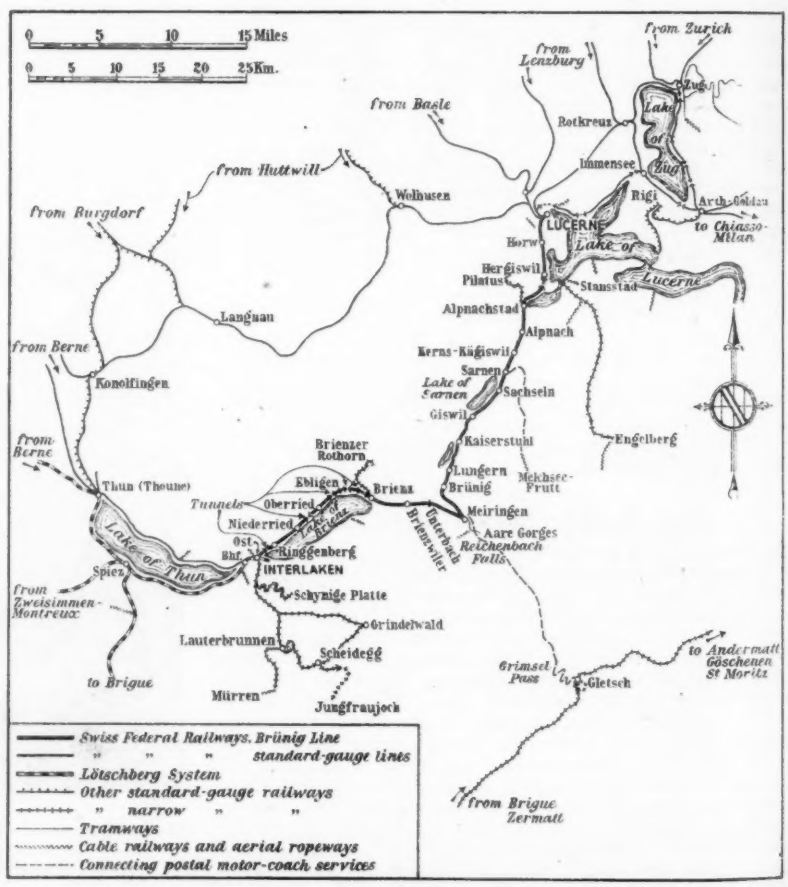
With steam traction, different types of locomotives were used for the mountain section between Giswil and Meiringen from those on the remainder of the route, worked solely by adhesion. Changes of engine were necessary at Giswil, Brünig, and Meiringen, and speeds were limited to 60 km. (37 miles) per hour on adhesion and 12 km. (7½ miles) per hour on rack sections, with maximum loads of 150 and 50 *tonnes* respectively. Two engines were usually required on the rack inclines and long trains had invariably to be split up. The electric motor-coaches, on the other hand, will work through from Lucerne to Meiringen (where trains reverse), and can haul loads of 240 *tonnes* at 75 km. (46½ miles) per hour on adhesion and 60 *tonnes* at 25 km. (15½ miles) per hour on rack sections, with the result that cuts in overall times up to 47 min. for stopping trains and 23 min. for expresses can be achieved, together with very appreciable simplification of working. In addition, the saving on fuel is specially important at the present time.

The overhead catenary equipment is of the type used in all recent conversions on the Federal Railways, with slanting suspension on curves. Power at 15kV, 16⅔ cycles, is supplied through the Emmenbrücke substation, near Lucerne, where additional equipment has been provided for the purpose.

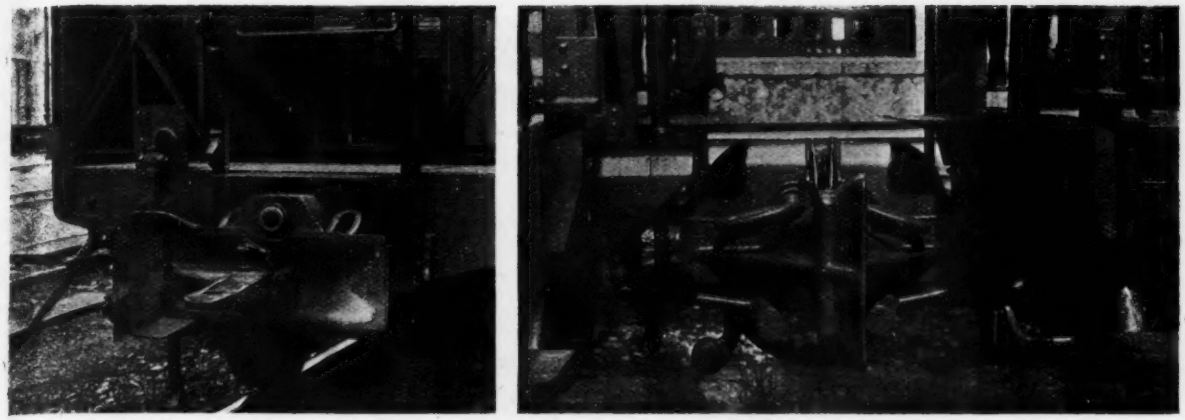
The order for a total of 16 motor-coaches was, as is now usual, divided between Oerlikon, Brown Boveri, and Sécheron for the electrical equipment; the mechanical part was built by the Swiss Locomotive & Machine Works, Winterthur. They contain no passenger accommodation but have two luggage compartments, thus avoiding the use of separate luggage vans. With an overall length of 13·65 m., the motor-coaches tare 56 *tonnes* and have an hourly rating of 1,200 h.p. Of the three bogies, each of which has two motors, only the central one is equipped for rack working. The transformer, compressor unit, and other equipment are housed in a central compartment between the two baggage rooms, which are connected by a side corridor. There is only one pantograph, and the greater part of the roof is occupied by resistances used for regenerative braking. The usual dead-man pedal equipment is provided in the driving compartment. Two electric shunting locomotives of four-wheel type have been allotted to Hergiswil and Meiringen stations.

Engineering Works

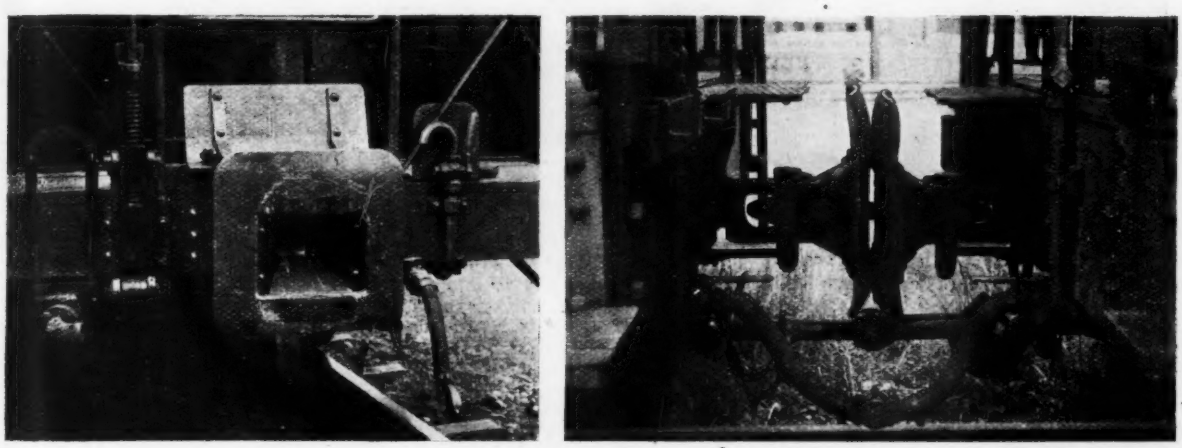
Apart from the actual electrification, several engineering works have been carried out on the line, some of which have already been referred to in THE RAILWAY GAZETTE. Crossing loops have been extended at various stations and colour-light home and distant signals provided. Hitherto few stations on this line had distant signals. Tunnels were enlarged by lowering the track, and opportunity was taken to make the clearance high enough for the passage of larger types of standard-gauge goods wagons, which are conveyed from Lucerne to Giswil and from Interlaken to Meiringen on special transporter trucks. A new bridge was built over the



Sketch map showing route followed by the Brünig Railway and its connections with other lines



Left: New type of coupler on Brünig line rolling stock, with link-pin to connect with old coupler. Right: Two new type couplers connected



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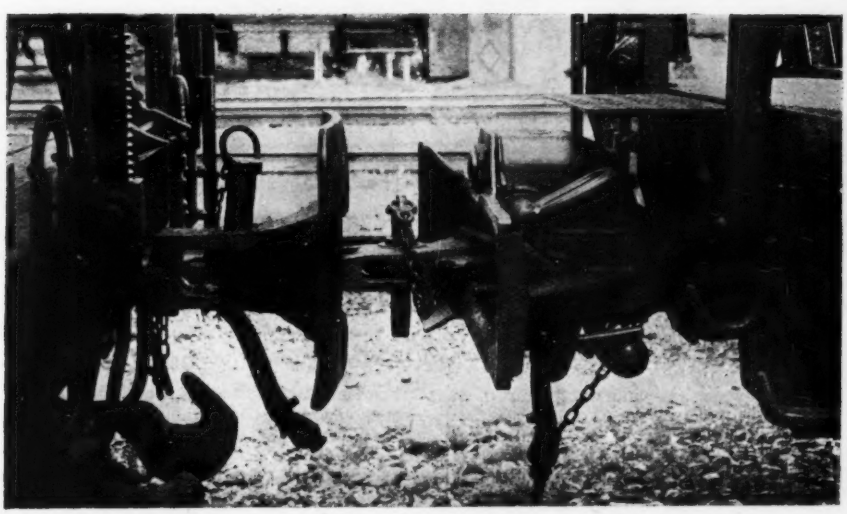


Old and new types of coupler connected

Schliere near Alpnach, and curves were eased at various points, particularly on the shore of the lake of Sarnen, where extensive relocation has removed severe speed restrictions. The engine sheds at Lucerne, Giswil, and Meiringen have been suitably fitted for the accommodation of electric motor-coaches, and the Meiringen workshops provided with the necessary equipment for light repairs. For regular overhauls the motor-coaches will be sent to the Zurich repair shops, and the Federal Railways have accordingly acquired a special truck for their conveyance over standard-gauge lines.

A steam train of the Brünig Railway leaving Meiringen for Lucerne, with rack banking engine

Approach to Lucerne Station, Brünig line, showing standard-gauge sidings on the left

The coaching-stock of the Brünig line consists mainly of bogie vehicles with open end-platforms, the few remaining six-wheel coaches being now little used. The centre-link couplings previously employed have been replaced by automatic couplings of the "GF" type, similar to those used on the Berne-Solothurn and other metre-gauge lines in Switzerland and produced by the A.G. der Eisen- & Stahlwerke vorm. Georg Fischer, Schaffhausen. Vehicles still fitted with the older type of coupling can be connected up by means of a special link piece and an extension of the air-brake hose.

Motor-coach (with old type trailer) in service at Brünig Station

Realignment of Brünig line on the shore of the Lake of Sarnen, showing old formation on right

A Further Swiss Electrification Scheme

Another Swiss private railway is to be converted to electric traction in order to increase its capacity and for economic reasons. This is the Bière-Apples-Morges Railway, a metre-gauge system of 29·7 km. (18½ miles), consisting of a line from Morges, on the Federal Railways main line from Lausanne to Geneva, to Bière, on the Jura slopes, with a branch from Apples to L'Isle. The main line was opened on July 1, 1895, and the branch on September 12, 1896. The maximum gradient is 3·5 per cent. (1 in 28½).

It had become increasingly difficult to cope with the heavier traffic resulting from wartime restrictions on road transport, and a 2-6-0 type engine purchased from the Furka-Oberalp Railway—and from which the rack motion and low-pressure pistons and rods had been removed—was placed in service at the end of December, 1940, to supplement the five existing locomotives. A third class coach and a goods wagon were also acquired from the Rhaetian Railway in March, 1941, bringing the rolling-stock total to 12 coaches, 3 vans, and 22 goods wagons.

It is intended that conversion should be completed, if conditions permit, by the spring of 1943. The standard 15-kV 16⅔-cycle system is to be used, and current supplied by the Swiss Federal Railways at Morges station. The overhead contact line will be of the catenary type, with slanting suspension on curves, supported by iron or concrete posts in stations and wooden posts elsewhere. Four 660 h.p. motor-coaches have been ordered; they are to have a tare weight of 33·3 *tonnes*, seating for 40 passengers in second and third class compartments, and a baggage compartment. The maximum speed will be 65 km. (40 miles) per hour. All the existing coaches will be fitted with electric heating.

NEW CRAVEN DUPLEX SLOT MILLING AND KEYSEATING MACHINE

A very useful tool for railway shops

THE operation of slot milling, often misnamed slot drilling, is a real milling operation in which an end mill is used to mill out a slot by many repeated quick traverses over a fixed distance, sinking only a few thousandths at each passage. By this method, accurate internal milling may be done on delicate finished pieces without damaging the work by the powerful clamping which is necessary in ordinary milling. The machine illustrated and described herewith, a new product of Craven Bros. (Manchester) Ltd. of Reddish, near Stockport, is designed to mill two slots simultaneously by means of two horizontal spindles. These slots may be both in one shaft, or alternatively the two halves of one slot which extends entirely through the shaft, *i.e.* a cotterway. Many kinds of workpieces other than shafts may be machined, such as slotted links, gun and small arms parts, valve slots, or any delicate mortising or facing operation on metal, ebonite, fibre, or the like.

The table has a travel of 12 in. and the in-feed of each spindle is 1½ in. The largest diameter cutter on steel is 1 in., and the machine will cut keyways up to 12 in. long by 1 in. wide by 1½ in. deep in steel shafts or workpieces, also cotterways up to 12 in. by 1 in., through 3 in. dia.

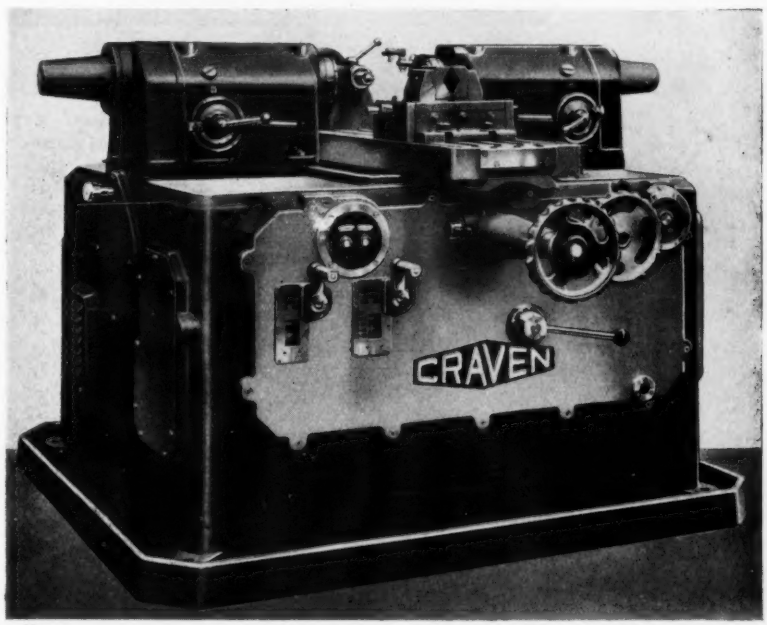
Cycle of Operations

The adjustable stop-dogs are set on either side of the positive stop to allow a travel for the length of the desired slot less the diameter of the cutter, and the micrometer depth dial is set to the desired depth. The spindle is advanced by lever till the cutter touches the work, being then locked by a lever, and the machine started. The work thereafter proceeds automatically, traversing the length of the slot, sinking a pre-arranged depth at the end of the slot, and reversing the travel till the desired depth is arrived at, when the cutter is automatically withdrawn. When several pieces have to be machined exactly alike, these adjustments have to be made for the first one only.

The spindles run in ball bearings, and require practically no attention. The noses of the spindles are bored taper for receiving improved design collets; a central draw bolt is provided for locking and ejecting. Eight spindle speeds are provided, ranging from 360 to 1,830 r.p.m.; the speed changes are operated by a single rotating lever which makes one revolution for every speed change. The speed selected appears through an aperture and the speeds run in consecutive sequence.

Eight traverse rates to the table are provided ranging from 1 in. to 12 in. a min.; slip change wheels augment the range up to 48 in. a min. In practice a rate of 24 in. a min. is found suitable for most classes of work. The feed-change motion is identical in principle to the spindle speed change as described above. The in-feed is regulated by a dial divided in thousandths of an inch, and various feeds can be obtained varying from one-thousandth to twenty-thousandths of an inch at the end of each traverse.

The essential operation in slot milling is the accurate reversals of the table traverse and that these should occur exactly at the same place, and the machine is designed with this in view. The table is also provided with adjustable stop-dogs which contact with a positive stop on the bed. The drive to the feed motion is obtained from the constant-speed main-drive shaft through an eight-speed change gearbox and worm gearing to the screw in the table. Reversing motion is provided in the gearing and the table screw runs in an oilbath. The table traverse operates between positive adjustable dead-stops having micrometer adjustment, and the reversal of the table at the end of each stroke is controlled by a reversing clutch. The control to the reversing motion is by worm gear and the resistance to the load of the cut and the table is balanced by two opposing springs. When the table contacts the dead stop at the end of each stroke, a pause takes place during which the reversing motions function and the in-cutting feed is applied to the cutters. Hand motion is also provided to the table and spindles, and these motions are interlocked so that they cannot be operated together. A geared pump supplies the coolant to the cutters, the coolant tank being formed in the body of the machine. An efficient system of chutes returns the coolant back to the sump and provision is made for cleaning.

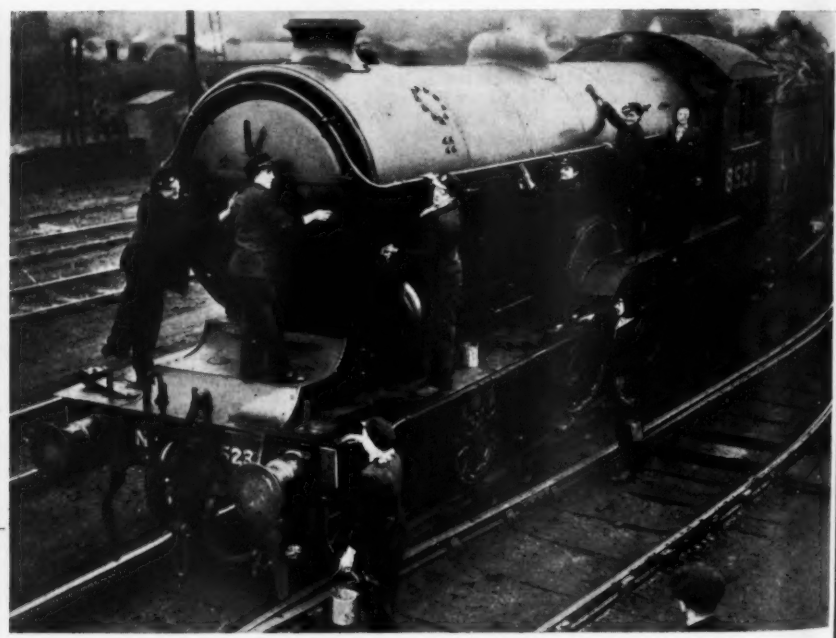


General view of Craven milling machine from operator's side

A NEW CHICAGO BRIDGE.—The two piers for the State Street double-leaf bascule bridge over the Chicago River at Chicago have been completed, but construction of the superstructure has been delayed by priority difficulties now that the U.S.A. is a belligerent. These piers straddle the subway tubes under the Chicago River at this point. The span between trunnions is 245 ft. The bridge will carry two 36-ft. roadways, separated by a 5-ft. centre curb, and two 11-ft. footways. Each bascule leaf will weigh 4,200 tons. A $1,276,848 contract for the superstructure and operating equipment was let to the Overland Construction Company, Chicago, last May. All foundations are Chicago well type caissons going to rock 110 ft. below river level. Caissons close to the subway structure were sunk by the subway contractor. Heavy transverse steel girders will carry the bridge piers over the subway. The contract for the foundations for the bridge and north approach viaduct was undertaken by the Fitz Simons & Connell Dredge & Dock Company, Chicago; the contract for the approach and viaduct across the railway yard at the north end has not yet been awarded.

British Railways and the War—106

A cheque for £5,000, collected by Southern Railway staff for the purchase of a Fulmar aircraft for the Fleet Air Arm, being handed to Mr. A. V. Alexander, First Lord of the Admiralty, by Mr. R. Holland-Martin, Chairman, Southern Railway Company. (See page 442)



Women railway workers are replacing men called up for the Forces in a wide variety of jobs on each of the British railway systems and at the recent general meetings of the railway companies each chairman paid tribute to the part they were playing

The inflow of women into the service of the British railways has continued increasingly since the outbreak of war. In our issue of December 12, 1941, a wide variety of the types of work in which women are playing a useful part in the railways' war effort were shown. The illustrations herewith show two other forms of activity in which women are now engaged. *Above:* A squad of L.N.E.R. women engine cleaners with one of their charges; the presence of the photographer appears to be known. *Left:* Two women engaged in posting bills on Underground stations of the London Passenger Transport Board who have replaced men formerly engaged in this work

RAILWAY NEWS SECTION

PERSONAL

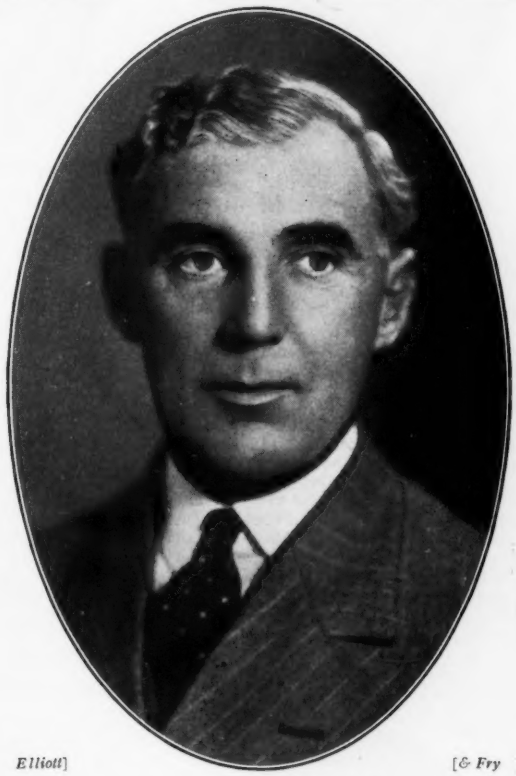
The Minister of War Transport has appointed Mr. D. Bulay-Watson to be Regional Port Director for the Humber Area.

Mr. H. E. Horne, who, as recorded in our March 13 issue, has retired from the position of Assistant Chief Commercial Manager, L.M.S.R., entered the service of the former Midland Railway as a junior clerk at Armley (Leeds) in December, 1888. After experience in various capacities at Newlay & Horsforth, and at Newark-on-Trent, he went in 1896 to Derby, where he was subsequently appointed Relief Clerk, and engaged primarily in relieving stationmasters. He was appointed Stationmaster at Harpenden in 1899, became Stationmaster at Cheltenham in 1907, and for the greater part of 1909 was at Derby with Mr. (afterwards Sir) Cecil Paget, the then General Superintendent, in connection with special work. In December, 1909, he went as Stationmaster to Leeds (Wellington), a post which he held until October, 1916, when he was transferred to Derby as Assistant Superintendent of Passenger Services. Mr. Horne occupied this position at the formation of the L.M.S.R. in January, 1923, when he was appointed Assistant for Passenger Services to the Chief General Superintendent. In June, 1929, he was appointed Assistant General Superintendent (Passenger Commercial); Assistant Passenger Manager on October 1, 1931; and in October, 1932, Assistant (Passenger) to the Chief Commercial Manager. He was appointed Acting Assistant Chief Commercial Manager, Euston, in 1938. While at Derby as Assistant to the General Superintendent of Passenger Services, Midland Railway, Mr. Horne was largely responsible for the introduction and subsequent organisation of the system of passenger train control. In August, 1935, Mr. Horne was appointed Assistant Chief Commercial Manager (Passenger), Euston.

Elliott]

Mr. H. E. Horne

Assistant Chief Commercial Manager, L.M.S.R., 1935-1942



[*& Fry*

Mr. D. C. K. McCulloch

Appointed Assistant Chief Commercial Manager, L.M.S.R.

We regret to record the death on January 7 of Mr. Henry Douglas Pollard, Co-trustee of the Central of Georgia Railway. Mr. Pollard was born in 1872 and in 1892 joined the Baltimore & Ohio Railroad. He entered the Engineering Department, Central of Georgia Railway, in 1898; he was appointed Assistant General Manager in February, 1918, and General Manager in June of the same year. He became General Superintendent of the road in 1920, and in January, 1924, was again appointed General Manager. Mr. Pollard was made Vice-President & General Manager in October, 1925, and became President & General Manager in June, 1931. Difficulties arose in 1932 and Mr. Pollard was appointed Receiver in December of that year. In June, 1940, the property was transferred from equity receivership proceedings to reorganisation, with Mr. Pollard as Trustee and active operating head of the railway.

Mr. D. C. K. McCulloch, who, as recorded in our March 13 issue, has been appointed Assistant Chief Commercial Manager, L.M.S.R., entered the London & North Western Railway service in 1901, and was concerned with both passenger and goods operation at Willesden and Berkhamsted. In 1904 he was atached to the office of the District Goods Manager in Manchester, but in February, 1906, was transferred to the office of the District Traffic Superintendent at Swansea. In February, 1909, he was appointed Goods Agent at Tipton, Staffs, transferring in March, 1912, to Liverpool Road, Manchester, in the same capacity. In June, 1917, he was appointed Assistant District Goods Manager at Wolverhampton, and in September, 1920, went to Leeds in the corresponding position. In June, 1924, he joined the staff of the Chief Goods Manager at Euston, and was attached to the office of the Goods Operating Manager. In 1927 he was appointed Commercial Assistant to the Goods Commercial Manager, and from July, 1928, he became Assistant to the Goods Commercial Manager, holding that position until January, 1930, when he was appointed Indoor Assistant to the Chief Goods Manager. He was appointed Commercial Assistant to Chief Goods Manager in 1931; after the reorganisation in 1932, under which the whole of the commercial work of the company was placed under the control of the Chief Commercial Manager, Mr. McCulloch was

Mr. F. C. Hockridge

Appointed Surveyor & Estate Agent, G.W.R.

Mr. W. A. Robertson

Appointed District Engineer, Lancaster, L.M.S.R.

Mr. W. P. Bradbury

Appointed Assistant Chief Commercial Manager (Outdoor) L.M.S.R.

appointed Assistant (Goods) to the Chief Commercial Manager, and in April, 1938, was promoted to Assistant Chief Commercial Manager (Goods).

Mr. Frederick Charles Hockridge, who, as recorded in our issue of February 27, has been appointed Surveyor & Estate Agent, G.W.R., in succession to Mr. F. W. Showers, who is retiring on March 31 after 54 years' railway service, has been in the railway service over 39 years, having commenced his career in the Secretary's office of the Taff Vale Railway: at the time of the passing of the Railways Act of 1921 he held the post of Chief Clerk to the Secretary of that company. Mr. Hockridge remained at Cardiff until February, 1924, when he was transferred to the Secretary's Office at Paddington, where he was responsible for estate and kindred matters in that department. In January, 1926, he was appointed Secretary of the Fishguard & Rosslare Railways & Harbours Company, and held that post until 1929, when he was appointed Assistant to the Surveyor. He was appointed Assistant Surveyor and Estate Agent in 1931. In addition to his Fellowship of the Chartered Surveyors' Institution, Mr. Hockridge has been a Fellow of the Chartered Institute of Secretaries and the London Association of Accountants for 23 years. He was appointed Deputy Surveyor & Estate Agent last year.

Mr. W. A. Robertson, Acting District Engineer, Derby South District, L.M.S.R., who, as recorded in our February 20 issue, has been appointed District Engineer, Lancaster, was educated at Oban High School, and George Watson's College, Edinburgh; he obtained his degree in Engineering at Edinburgh University. Mr. Robertson entered the service of the L.M.S.R. at Derby in 1923 as a privileged assistant, and spent three years in the office of the Central District Engineer to gain experience in permanent way and bridge maintenance. In January, 1926, Mr. Robertson was appointed Assistant to the Resident Engineer on the Chevet & Snydale widening, and in July, 1927, became Resident Engineer in charge of the construction of the Welbeck Colliery Branch. Three years later he was appointed Assistant to the Resident Engineer on the Barking & Upminster widening, and in December, 1932, he was made Resident Engineer on various new works on the London, Tilbury & Southend section. In December, 1933, Mr. Robertson was appointed Assistant to the District Engineer, Northampton and in February, 1940, he became Acting District Engineer, South Wales District. He was appointed Acting District Engineer, Derby South District in August, 1941.

Mr. W. P. Bradbury, Assistant Chief Commercial Manager (Passenger), L.M.S.R., who, as recorded in our

Mr. C. Johnstone

Appointed Assistant Chief Commercial Manager (Passenger) L.M.S.R.

Mr. J. R. Pike

Appointed Assistant to Commercial Manager (Goods) L.M.S.R.

Mr. F. E. Bailey

Appointed Assistant (Claims), Chief Commercia Manager's Department, L.M.S.R.

March 13 issue, has been appointed Assistant Chief Commercial Manager (Outdoor), L.M.S.R., entered the service of the former London & North Western Railway in the District Superintendent's Office at Euston in 1905 and was transferred to the Department of the Superintendent of the Line in 1910. He served with the Forces in France from 1915 to 1919 and retired with the rank of Major. Shortly after his return to the L. & N.W.R. Mr. Bradbury was appointed Chief Staff Clerk, Superintendent of the Line's Department, and on the amalgamation of the railways in 1923 took up the position of Chief Clerk to the General Superintendent (Passenger Commercial) and was subsequently promoted to Assistant. Mr. Bradbury was responsible for the detailed work connected with the presentation of the railway companies' case for road powers in 1928, and was appointed Road Transport Assistant the same year. On the creation of the Chief Commercial Manager's Department in October, 1932, he was made Assistant (General) to the Chief Commercial Manager, was made Assistant (Passenger) in July, 1935, and in 1938 was appointed Assistant Chief Commercial Manager (Passenger). Mr. Bradbury dealt with many of the negotiations preceding the acquisition of the L.M.S.R. interests in road passenger services, and subsequently was intimately connected with the arrangements and negotiations concerning his company's interests in air services. He has been a member of the board of certain of the associated bus companies, Chairman of all the joint bus committees with municipalities in which the L.M.S.R. is interested, and was first Chairman of Isle of Man Air Services Limited on amalgamation of the air services serving the Isle of Man. He represents the L.M.S.R. on the boards of Scottish Airways Limited, Western Isles Airways Limited, and Isle of Man Air Services Limited, and is a member of the Associated Airways Joint Committee. He is also Commercial Manager of Railway Air Services Limited, and Commercial Manager of West Coast Air Services Limited.

Mr. C. Johnstone, who, as recorded in our March 13 issue has been appointed Assistant, Chief Commercial Manager (Passenger), L.M.S.R., joined the service as a junior clerk with the former Caledonian Railway at Aberdeen (Goods) in 1901. He was subsequently transferred to the District Traffic Superintendent's Office there, and thence in 1906 to the Rates, Fares, and Excursion Department in the Office of the Superintendent of the Line. In 1912 he was appointed Deputy to Mr. Crozier, who was then in charge of that department, and when the latter was appointed Assistant Superintendent of the Line, Mr. Johnstone succeeded him as Clerk-in-Charge, in which capacity he represented the Caledonian Railway Company in matters pertaining to the commercial side of the Superintendent's Department at the Railway Clearing House. When the amalgamation took place in 1923, Mr. Johnstone became Chief Clerk to the Divisional Passenger Commercial Superintendent for Scotland, and in January, 1924, was appointed Railway Clearing House representative for the group and attached to the General Superintendent (Passenger Commercial), Derby. From April, 1928, until June, 1929, he was acting General Assistant to the General Superintendent (Passenger Commercial), when he was appointed Rates and Charges Assistant to the General Superintendent (Passenger Commercial). In October, 1932, he was made District Passenger Manager at Liverpool, which post he held until 1938, when he was appointed Assistant to the Chief Commercial Manager (Passenger), Euston. Mr. Johnstone was Chairman of the Passenger Train Rates & Fares Conference at the Railway Clearing House in 1920, Chairman of the Superintendents' Representatives, and sub-committees of that body in 1922, and Chairman of the latter in the year 1927, as well as of the Excursion Representatives. While in Scotland he took a keen interest in ambulance work, and was secretary of the local class in Aberdeen for two years, and for several years was hon. secretary of the Caledonian Railway Ambulance Brigade.

Mr. J. R. Pike, Assistant (Rates & Charges), Chief Commercial Manager's Department, L.M.S.R., who, as recorded in our March 13 issue, has been appointed Assistant to Chief Commercial Manager (Goods), was educated at the City of London School. He entered the service of the London & North Western Railway in 1914 and was engaged at the Brompton & Fulham and Harrow Goods Depots, and the Liverpool District Goods Manager's Office until 1916. From 1916-1919 he served with the 10th Cruiser Squadron as a Sub-Lieutenant (R.N.V.R.). After the war he returned to railway duties, serving at Kings Langley (Passenger) and Broad Street (Goods) Stations. Mr. Pike was transferred to the Chief Goods Manager's Office, Euston, and, in 1923, was appointed to the newly formed development section in the Chief Goods Manager's Office. In 1931 Mr. Pike was appointed Personal Assistant to the Vice-President, and served successively under Mr. John Quirey, Mr. J. H. Follows, and Sir Ernest Lemon. Mr. Pike was made Assistant to District Goods & Passenger Manager, Leicester, in 1933, and a year later he was appointed Assistant (Rates Tribunal Section), Chief Commercial Manager's Department, Euston. In 1935 Mr. Pike became Assistant (Research) to the Chief Commercial Manager and, in 1938, was appointed Assistant (Rates & Charges) at Watford.

Mr. F. E. Bailey, who, as recorded in our March 20 issue, has been appointed Assistant (Claims), Chief Commercial Manager's Department, L.M.S.R., was educated at Sir John Deane's School (A.D. 1557), Cheshire, and entered the service of the Lancashire & Yorkshire Railway in 1910. He served in various departments of the District Superintendent's Office at Manchester and in the Goods Department at Trafford Park and Manchester Docks. He joined the army shortly after the outbreak of the last war and was granted a Special Reserve Commission in the 3rd Battalion Manchester Regiment, serving in France with the 19th (4th City Pals) Battalion. In 1918 he was appointed to duty with the Royal Engineers, Docks Directorate, and served at Calais, Rouen, Cologne, and Rotterdam; at the last-named in 1919 he was responsible for demobilisation arrangements and for food shipments into Germany *via* the Rhine. On resuming railway duties in 1920 he was engaged at Manchester Docks on the Ministry of Transport scheme for relieving congestion at the docks, and was later appointed Commercial Representative covering the Trafford Park area and shipping concerns in Manchester. He was appointed Goods Agent, Manchester Docks & Trafford Park in 1929, and Chief Canvasser, Manchester District, 1932. In 1934 he was appointed Assistant to District Manager, Bolton, and has also been assistant to the London District Goods Manager. After completing a special inquiry into the commercial liaison arrangements in the London District, Mr. Bailey was in 1936 appointed Sales Assistant to the Chief Commercial Manager at Euston, and on the opening of the L.M.S.R. School of Transport at Derby he was appointed Member of the School Council, and also Lecturer on "Railway Salesmanship." Last year Mr. Bailey was appointed Acting District Passenger Manager, Euston, in the absence of Mr. H. E. Roberts, abroad on special Government service.

We regret to record the death on March 23, at the age of 86, at Abergavenny of Sir Henry Mather-Jackson, Bt., C.B.E., Lord Lieutenant of Monmouthshire. He was formerly a director of the Rhymney Railway Company, and had been a director of the Great Western Railway Company since 1922; he was also formerly Chairman of one of its constituent companies, the Alexandra (Newport & South Wales) Docks & Railway Company.

Mr. J. McNeil, Chief Assistant to the District Superintendent at Glasgow, has been appointed Acting District Superintendent, Glasgow, in succession to Mr. J. McKenzie, whose death was recorded in our January 16 issue.

We regret to record the death on March 20, at Bournemouth, of Mr. Osborne Anthony George Edwards, M.Inst.C.E., who was successively District Engineer (Clapham Junction), Eastleigh, 1904-1911, and Western District Engineer (Exeter), 1912-1921, of the former London & South Western Railway Company. He retired in 1921 after 46 years' service.

We regret to record the death of Mr. Hugh Morton Craig, Director of Heavy Steel Products in the Iron and Steel Control section of the Ministry of Supply. Mr. Craig's knowledge of the steel trade was gained with Colvilles Limited, of Glasgow. He joined the staff of the British Steel Export Association in London some years ago, and later was appointed General Manager. He had served with the Ministry of Supply since the outbreak of war.

We regret to record the death, on March 4, of Mr. Henry Spurrier in his 75th year. Mr. Spurrier was Managing Director of Leyland Motors Limited, the first company to apply pneumatic tyres to double-deck buses.

Señor Antonio Vaquer, formerly Minister of Public Works in the Buenos Aires Provincial Government, has been appointed General Manager of the City of Buenos Aires Transport Corporation.

The Institute of Transport

The undernamed have been elected to corporate membership:—

Mr. R. C. Hider, District Traffic Superintendent (Railways), London Passenger Transport Board.

Mr. F. C. G. Mills, Chief Executive Officer, Transport Services Limited.

Among those elected to associate membership are:—

Mr. R. G. Grout, Secretary, General Steam Navigation Co. Ltd.

Mr. N. S. Taylor, Great Western Railway.

TRANSPORT SERVICES AND THE WAR—133

The work of the British railways—Easter travel restrictions in Great Britain, Ireland, and New Zealand—Double summer time and agricultural transport—Australian defence transport—The Associated Airways Joint Committee

British railways today are carrying enormous quantities of freight, and are using less locomotive power than usual to do it. Few new engines have been built recently because of prior demands on available steel, and locomotive stocks have been depleted in various ways. Some were sent to and lost in France, 143 have gone to help Russia, and others have been loaned for use in factory sidings.

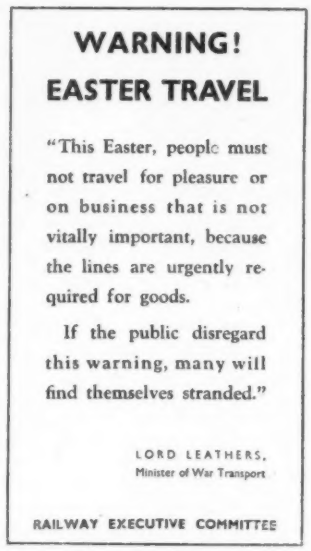
In a recent month the total of loaded wagon miles was 301,088,461, which is 11,557,632 more than in 1929, the pre-war peak year. In a recent week more than 4,000,000 tons of coal and raw materials were transported by railway and upwards of 1,000,000 tons of finished products. Through one important main-line junction 3,000 wagons pass every twenty-four hours in each direction.

Special arrangements have been made to enable 100,000 twelve-ton wagons to carry 13 tons, increasing the total wagon capacity by 100,000 tons. When rush consignments of steel billets due to arrive at the ports from America required more wagons capable of handling them than were available, railway workshops converted 4,000 wagons into 2,000 pairs of bolster wagons suitable for carrying long loads, and the consignments were transported to the factories without delay.

Every day now the railways are working 53,445 wagon loads of coal from the mines. Deliveries of coal have been expedited by running block coal trains, which carry train loads of coal direct from the mines to large consuming areas; every week 450 such trains are worked.

Little used routes have been adapted to increase line capacity and to relieve over-burdened main lines.

Extra trains for workers at Government factories now total between 700 and 800 daily, aggregating 400,000 train miles a month.


WARNING!
EASTER TRAVEL
"This Easter, people must not travel for pleasure or on business that is not vitally important, because the lines are urgently required for goods.
If the public disregard this warning, many will find themselves stranded."
LORD LEATHERS,
Minister of War Transport
RAILWAY EXECUTIVE COMMITTEE

R.E.C. press advertisement

Easter Army Travel Restrictions

Army personnel will not be allowed leave involving railway travel in this country from Thursday, April 2, to Tuesday, April 7 (both days inclusive). Short pass leave involving a journey by rail during the week beginning March 31 will also be disallowed. This regulation will be relaxed in the cases of sick, embarkation, and compassionate leave.

Easter Sailing Tickets for Ireland

The London Midland & Scottish Railway, the Belfast Steamship Company, and the Burns & Laird Lines Limited, have given notice that they will not issue rail and steamer tickets for travel to Ireland between April 1 and 4 (both dates inclusive), unless the passenger is in possession of a sailing ticket. Applications for sailing tickets were required to be made at least ten days before the date of the proposed journey, and to give an alternative date. The possession of a sailing ticket does not exempt the traveller from the necessity of applying for an exit permit. Travellers to Ireland are advised to carry as little luggage as possible, and to carry no documents except when absolutely necessary.

Free Travel Suspended for Civil Defence

The Ministry of Home Security announced on March 17 that the scheme in operation last year, under which whole-time members of the Civil Defence Services in heavily-raided areas were provided with free travel when they went on their annual leave, has been suspended. The reason is the lull in serious air raids and the growing need to restrict the use of public transport. This year tickets or vouchers will be provided free only if heavy raiding is resumed, and will be available only in areas named by the Regional Commissioners. In such circumstances, whole-time paid members of the Civil Defence Services in those districts (including Head and Senior Fire Guards) will be eligible for vouchers, provided their leave is of not less than three days, and they have made arrangements to spend their holiday at the place they name. The outward journey will be limited to 150 miles, and if the applicant wishes to go further than that he or she will be required to pay the difference.

New Zealand Restricts Easter Travel

Easter rail travel in New Zealand will be restricted. The War Cabinet has decided that persons desiring to travel more than 100 miles must give adequate reasons for the journey.

Manx Fuel Ration Cut

The basic petrol ration for motor vehicles in the Isle of Man is to be abolished from June 30.

Petrol Restrictions in Eire

No petrol for private motoring will be issued in Eire after May 1, and petrol rations for essential services will be cut drastically. Horse-racing may be centralised and all outdoor sports placed on a basis which would result in economy in fuel. Petrol for road transport will be reduced by about half.

Colour in L.M.S.R. Workshops

Painting machinery and walls of workshops with a light coloured paint is helping war production. Blackout conditions tend to make engineering shops very sombre, and this, combined with long hours of work, has led the L.M.S.R. to endeavour to increase the brightness and general visibility in its shops without increasing the intensity of the lighting. As an experiment, machines and metal work in one of the large L.M.S.R. shops were painted a light buff colour, and the results were so satisfactory that the policy has now been adopted as standard. Workpeople are pleased with the change and cases of eyestrain, due to long hours of work under artificial light, have decreased. Operatives, too, take a greater pride in their light-coloured machines. More than 500 machines have so far been treated. Walls of shops are whitewashed, except for a 5-ft. black band at the bottom. Steelwork in roofs and cranes are painted a light stone colour.

Double Summer Time and Agricultural Transport

Double summer time in Great Britain this year will extend from the night of Saturday, April 4, to the night of Saturday, August 8. It has been decided to repeat last year's arrangements whereby farmers and farm workers remain on single summer time unless they agree together to "contract in" to double summer time. Since the requirements of food production on the majority of farms will involve continuance of single summer time, the railway companies have agreed to re-time the milk trains. This facility does not, however, apply to passenger trains. Similarly, road hauliers have been asked through their associations to adjust their collection of milk to single summer time—that is, to call an hour later by the clock. Also, the railway companies will, wherever possible, and where there is sufficient demand, keep the goods yard open an hour later by the clock for the receipt of horticultural produce. These arrangements will not necessarily apply in all districts. In some places the majority of farmers and farm workers may operate on double summer time, and in these localities the railway companies and road hauliers will conform to the practice of the majority.

S.R. Employees Buy a Fulmar Aircraft

All grades of the staff of the Southern Railway, who in October, 1940, bought a Spitfire for the R.A.F., have since collected the price of a Fulmar for the Fleet Air Arm. In view of the large number of Southern Railway vessels now under the Admiralty flag, it was felt appropriate to support the Fleet Air Arm. A cheque for £5,000 was handed to the First Lord of the Admiralty, Mr. A. V. Alexander, by the Chairman of the Southern Railway Company, Mr. R. Holland-Martin, supported by the General Manager, Mr. E. J. Missenden, and other officers of the company. The First Lord, in expressing his gratitude for the gift, paid tribute to the railway staff who had manned the Southern Railway vessels now working with the Navy, some of whom already had given their lives. He expressed sympathy and understanding with the rail-

way position, and said that the knowledge he had made him "reticent in criticism and unreserved in praise for what the Southern Railway had done during this war." He gave personal details that had come before him of sons of railwaymen joining up with the Fleet Air Arm. It was fitting that the railways should provide the machine for these young men to use. A view of the presentation is reproduced at page 438.

The London Transport Spitfire

Four men representing the staff of the London Passenger Transport Board were present on March 13 when a second cheque for £2,500 was handed over to the Parliamentary Secretary to the Ministry of Aircraft Production. The total sum of £5,000 which has been subscribed by the staff, mostly in 1d. units, will purchase a Spitfire which will bear the name *London Transport* and the boards symbol—the Griffin. It is hoped to arrange for the Spitfire to be flown by one of London Transport's own staff in the Fighter Command.

Facilitating London Transport Bus Starting-up

To enable buses to start-up easily in the morning, thereby increasing the life of batteries, the London Passenger Transport Board is to purchase 126 booster trucks and 50 topping-up trucks for use at garages. The topping-up trucks are fitted with a tell-tale device to indicate when the battery is adequately "topped"; this obviates the risk of over or under filling and thereby adds to the life of the battery. Under war conditions batteries are subjected to increased strain. The operation of short journeys, due to war conditions, necessitates additional starting-up. The new equipment should effect a considerable economy.

Road Transport Restrictions in the U.S.A.

In the interest of the national war effort, the War Production Board has ordered that supplies of petrol for civilians be reduced by 20 per cent. from March 19 onward. The petroleum industry has recommended that no retail sale shall be made between 7 p.m. and 7 a.m. in the eastern area of the U.S.A., with no sales on Sundays, as the alternative to rationing.

President Roosevelt has written to the Governors of all the States urging them to impose a speed limit on highways of 40 m.p.h. in order to conserve motorcar tyres.

Australian Defence Transports

Since the construction of the "all weather" road between Alice Springs (the northern terminal of the Central Australia Railway) and Birdum (the southern terminal of the Northern Australia Railway), heavy transport demands on these two railway systems have been made by the Defence authorities. The concentration of troops and equipment in North Australia required special organisation, and locomotives and rolling stock had to be hired from other States, together with the necessary extra staff. Troops and equipment, after being conveyed on the Central Australia Railway to Alice Springs, are carried by motor convoy over the "all weather" road to Larrimah, near the southern terminal of the Northern Australia Railway. The extent of the increase in the traffic over these lines is shown by the figures given in the annual report of the Australian Commonwealth Railways for the year ended June 30, 1941, from which document our information is derived. Earnings on the Northern Australian Railway increased in the year 1939-40 by £32,479, or 59 per cent., and in the year 1940-41, to which the report refers, the increase was even greater, amounting to no less than £107,735, or 123 per cent. The tonnage handled at Port Darwin has increased in the last two years, in a similar way, the increase in 1940-41, over 1939-40, having amounted to 67 per cent. in the tonnage discharged, and 87 per cent. in the tonnage lifted. The overland route to Darwin, including a description of the building of the final road link in the rail-cum-road route connecting Adelaide and Darwin, formed the subject of an article (with map) at page 553 of our issue of November 28, 1941.

Associated Airways Joint Committee

An important but not widely known wartime organisation connected with the operation of internal air lines in Great Britain is the Associated Airways Joint Committee, which has its registered office at 88, Kingsway, W.C.2, and its chief base at Speke Airport, Liverpool. The committee, which is registered under the Registration of Business Names Act, was established in May, 1940, and consists of representatives of the following eight companies:—

Air Commerce Limited.
Great Western & Southern Air Lines Limited.
Isle of Man Air Services Limited.
Olley Air Service Limited.
Railway Air Services Limited.
Scottish Airways Limited.
West Coast Air Services Limited.
Western Isles Airways Limited.

These companies operate certain approved wartime air services under an agreement with the Secretary of State for Air. The list of the public air services at present working within the limits of the British Isles was set out at page 371 of our March 13 issue. The principle function of the Associated Airways Joint Committee is the conduct of certain negotiations with the Air Ministry on behalf of its member companies. The members of the committee are as follow: Sir Harold Hartley (Chairman), and Messrs. W. P. Bradbury, J. W. Sholto Comber, John Elliot, K. W. C. Grand, James W. Ratledge, and J. S. Wills. The Secretary is Mr. R. J. Ellery; the Manager, Wing-Commander A. H. Measures; and the Deputy Manager, Capt. G. P. Olley.

The latest company to become a member of the railway-associated group is West Coast Air Services Limited, which was incorporated on April 3, 1933, as Blackpool & West Coast Air Services Limited, and adopted its present title in November, 1937. The whole of the capital is held by West Coast Airways (Holdings) Limited, which was formed on September 12, 1941, for this purpose. The shares of the Holdings company are held by British & Foreign Aviation Limited, Coast Lines Limited, the Great Western Railway, and the London Midland & Scottish Railway.

Before the outbreak of war, West Coast Air Services Limited, in conjunction with Aer Lingus Teoranta, operated a twice-daily joint service between Croydon and Dublin, calling at Bristol, under the partnership title of Irish Sea Airways. Services are now being maintained on six days a week between Manchester (Barton Airport) and Dublin under a wartime agreement with the Air Ministry; as in pre-war days, the services are operated in close association with those of Aer Lingus Teoranta, of Eire.

Roumania Bans Civilian Travel

Civilians in Roumania may now travel on trains and motor-buses only if they have a special permit, according to the Bucharest correspondent of the Swiss Press Telegraphic Agency. The permit is given only for urgent reasons.

Higher Railway Rates in Turkey

The Turkish State Railway authorities recently announced an increase in passenger rates of 20 per cent. The rates for fresh fruit and vegetables, meat, milk, yoghourt, and dead poultry are also raised somewhat.

Norwegian Railways Reserved for Military Traffic

As from March 1, all railways in Norway have been reserved primarily for military traffic, according to the Stockholm newspaper *Svenska Dagbladet*. Special restrictions have been placed on passenger railway traffic between Dombaas and Trondheim, and between Lunde and Kristiansand. Earlier restrictions on Norwegian travel were recorded at page 315 of our February 27 issue, and page 345 of March 6; these related to the Oslo-Bergen line. Further details of travel restrictions were issued in Oslo on February 15. Civilians wishing to travel by railway or boat more than 100 km. (62 miles) must apply in writing for a permit at least a week ahead, with details of their reasons for travelling and an authoritative certification that the journey is necessary. Germans, and Norwegians working for Germans, have special facilities for obtaining permit. Anyone found on a train without a permit is removed.

German Inland Waterways in 1941

The *Berliner Börsen-Zeitung* recently stated that, according to preliminary details, it appeared that traffic on the inland waterways of Germany, despite unfavourable weather in November and many difficulties resulting from the war, was 21 per cent. greater in 1941 than in 1940, and may have reached the highest peacetime level. The quantity of iron carried by water increased by 77 per cent. as compared with 1940, of wood by 37 per cent., and of building material by 36 per cent. The increase of 20 per cent. in the quantity of coal carried was the most important, as coal comprises one-third of all the goods carried by the inland waterways.

During 1941 there was an increase of 20 per cent. in the fleet of inland tugboats and barges on the waterways of Germany, as the result of acquisitions by requisitioning of vessels from Holland and France.

Sava Bridge in Croatia Temporarily Restored

According to the *Neues Wiener Tagblatt* of January 21, the bridge over the River Sava, at Brcko, which was destroyed during the fighting in Jugoslavia, has been rebuilt, and is now in use. The north-eastern part of Bosnia has thus once again a direct railway connection with northern Croatia. The present bridge is only a temporary structure. As shown in the maps on page 260 of our February 20 issue, Brcko is a terminus on the south side of the River Sava. By carrying the standard-gauge railway from Vinkovci across the river, the bridge makes Brcko an important railhead for north-east Bosnia.

XUM

LONDON & NORTH EASTERN RAILWAY COMPANY
ADJOURNED GENERAL MEETING

The adjourned annual general meeting of the London & North Eastern Railway Company was held at the Board Room, Marylebone Station, London, N.W., on March 20. Sir Ronald W. Matthews, Chairman of the company, presided.

The Chairman: Ladies and Gentlemen: This meeting, being an adjournment of the nineteenth ordinary general meeting of the proprietors of the company held at Grosvenor House, Park Lane, London, W.1, on March 6, 1942, is for the purpose of declaring the result of the poll demanded at that meeting on the following resolution:—

"That each individual holder of either the preferred ordinary or deferred ordinary stock in the company be allowed free travel over his own railway to the extent of eight miles of first class travel or twelve miles of third class travel yearly for each one pound nominal of either class of stock which he holds, provided that he has held this stock for a period of at least one year previously, and that each holder of first or second preference stock be allowed a similar privilege at the same rate to the extent that he may have received interest on his capital at a lesser rate than that to which he is entitled."

The result of the poll then taken is as follows:—For the resolution, number of votes, 300; representing in stock, £119,859. Against the resolution, number of votes, 163,833; representing in stock, £58,867,639. I therefore declare that the resolution is not carried. That concludes the business of the meeting.

Major Gardiner asked whether any scrutineer on his behalf was present when the scrutiny took place.

Mr. W. H. Johnson (Assistant Secretary) said that due to a misreading of Mrs. Alexander's (the scrutineer's) form, she was not present.

Mr. I. Buchanan Prichard (Chief Legal Adviser) said that there was no legal necessity for a scrutineer. The scrutineer was there only to see that the votes were properly declared. They had been declared, and if Major Gardiner thought that they had not been properly declared it was open to him to take other steps outside.

Mr. H. Atkinson said he thought he could claim to be a representative of Major Gardiner, as he had voted for his resolution, and he was present at the scrutiny.

Major Gardiner said that he would not have pressed the point very closely, in any case, as the result had been a foregone conclusion. The result of the poll had depended completely on the number of proxies held by the company. Those proxies had been sent out with a stamp to frank them in sending them out, with a stamp for their return, and with a stamp to make them legal—all costing money—on an issue on which no explanation had been sent through the Secretary. He did not think that the proprietors of this railway would vote in such overwhelming numbers against a resolution which was entirely in their interests.

The Chairman explained that it was only in the interests of certain sections of the stockholders. The interests of the guaranteed stock and the first preference stockholders might be very seriously affected by a resolution of this sort being passed. If the resolution were passed, it might impose a very great financial burden on the total revenue of the company.

ADJOURNED EXTRAORDINARY GENERAL MEETING

The adjourned extraordinary general meeting of the London & North Eastern Railway Company was held at the Board Room, Marylebone Station, London, N.W., on March 20. Sir Ronald W. Matthews, Chairman of the company, presided.

The Chairman said: This meeting, being an adjournment of the extraordinary meeting of the proprietors of the company, held at Grosvenor House, Park Lane, W.1, on March 6, 1942, is for the purpose of declaring the result of the poll demanded at that meeting on the following resolution:—

"That the Bill intituled 'An Act to empower the Great Western Railway Company, the London & North Eastern Railway Company, the London Midland & Scottish Railway Company, and the Southern Railway Company to give guarantees and to make financial and other arrangements in connection with or arising out of the acquisition by Hay's Wharf Cartage Co. Ltd. of the share capital of Thos. Cook & Son Ltd., and for other purposes,' which is now submitted, be and the same is hereby approved, subject to such additions, alterations and variations as may be determined by the directors, and as Parliament may think fit to make therein."

The result of the poll then taken is as follows: For the resolution:—Number of votes, 18,197. Representing in paid-up capital, £7,699,442. Against the resolution:—Number of votes, 158. Representing in paid-up capital, £30,537. I therefore declare that the resolution is carried. That concludes the business of the meeting. Now, if you want to speak "off the record," Councillor Wilson, you may.

Councillor Wilson said he thanked the Chairman for his statement to the Wharncliffe meeting that the company desired the acquisition of Thos. Cook & Son Ltd. for a limited capital, or for a limited guarantee of £450,000, payable by three yearly instalments of £150,000 a year. That was committing the four companies concerned to a limited amount of £450,000, and if that had been the end of it he would have been voting for £450,000, instead of demanding a poll. Each Chairman had clearly said to the Wharncliffe meeting that they have been seeking statutory powers for this purpose, and that it was a limited guarantee of £450,000, £150,000 a year. He found the Bills which had been presented in the House of Commons to be dealt with by the Select Committee of Standing Orders, and the Bill was unlimited—absolutely unlimited—and any amount of money from the four railway companies could be spent. They had the power, but he thought the companies would have to conform with statutory powers obtained from the Wharncliffe meeting, which clearly described the £450,000, and it would have to be embodied in the Bill, because that was the statutory power that had been granted.

The Chairman said the company was governed by a contract. There was no reason why that contract should be varied; it was signed, sealed, and delivered, and the liability is clearly expressed in the contract.

Mr. I. Buchanan Prichard said there was a contract by which the companies were acquiring the whole of Cook's capital through a subsidiary, and they were not paying a pennypiece for the acquisition of the capital of Cook's. They had entered into an agreement to keep it a going concern for three years, limiting the liability to £450,000. Let them assume that in the fourth year they had a pretty valuable property, but its profit and loss account was in debt. If he, as the draughtsman of the Bill, had limited the powers they should have had to wind up Cook's, because they had not got the power to go on, or they would have had to go to Parliament to get the power; and a Bill was not altogether a cheap matter. They would have been put to that expense simply because he had been so shortsighted as to put a limit in the Bill. He had been protecting the company.

The Chairman said that if the House of Commons thought that the Bill did not provide adequate safeguards, no doubt it would amend it.

Councillor Wilson said he was satisfied. He had done what he thought was the right thing for his own interests and for the benefit of those people who had not been at the meeting; they knew that there was not going to be another penny spent other than the power which the company had obtained from the meeting. He went on to move a hearty vote of thanks to the Chairman.

The Chairman said in conclusion that he would like on behalf of the stockholders to thank the scrutineers, both those who attended and those who volunteered, but did not attend through no fault of their own, for their kindness in giving their time and knowledge in dealing with the poll, which had been carried out in every way satisfactorily. He also expressed his appreciation of the vote of thanks.

(*The proceedings then terminated.*)

POWELL DUFFRYN AND WELSH ASSOCIATED COLLIERIES.—An extraordinary general meeting of Powell Duffryn Steam Coal Co. Ltd. has been convened for Wednesday, April 1, at the Great Western Royal Hotel, Paddington Station, to consider resolutions to:—(1) confirm the offer by the company to acquire the £1,831,457 of 4½ per cent. preferred ordinary stock and the one half (£2,539,008) not already owned by the company of the ordinary stock in Welsh Associated Collieries Limited in consideration of ordinary shares in the company to be issued and allotted as fully paid in the proportions of two ordinary £1 shares in the company for every £3 of 4½ per cent. preferred ordinary stock in Welsh Associated Collieries Limited and one ordinary £1 share in the company for every £4 ordinary stock in Welsh Associated Collieries Limited; (2) to increase the share capital of the company from £6,114,112 to £7,969,836 by the creation of 1,855,724 new ordinary shares of £1 each.

PARLIAMENTARY NOTES

Producer Gas

The Duke of Montrose in the House of Lords on March 11 moved the following resolution: "That in view of the continued deterioration in the oil supply in the East, the addition of the strength of the German Fleet, the prospective heavy demand on the American oil supplies, and the vital importance of reducing the strain on shipping in handling large imports of oil, immediate steps be taken to economise all possible petrol for the use of the Services in the war, by introducing producer gas propulsion for motor transport on the largest possible scale." The position had grown very much worse, he said, since the subject was debated on December 9, and something practical must be done. We had lost oilfields on the west side of the Pacific and we were losing oil supplies and refineries in Burma. That really meant losing our oil supplies in the Indian Ocean too. If it was urgent in December that something should be done for the sake of our own Fighting Services, it was now imperative that something should be done. We were the only great nation in the world to-day that had no alternative power to petrol. All the Axis Powers had gone in for producer gas and synthetic petrol as alternative powers to oil for their Fighting Forces. Japan had spent £24,000,000 on a five year plan to make synthetic petrol and establish gas production in her country before ever she went to war. She also passed a law making it compulsory for every vehicle in Japan not only to be fitted for petrol but to be fitted for producer gas as well. He had good authority for saying that the Axis Powers had 200,000 vehicles running on producer gas to-day. That was saving them about 2,000,000 tons of petrol a year. He did not know that we could do anything as big as that, but we could do half what the Axis Powers had done. If we had only 50,000 vehicles, it would save 500,000 tons of petrol a year, which was a very big proportion of all the petrol used by the Fighting Forces in a year.

Lord Ailwyn, who supported the motion, said that the time had come to put an end to indolence, apathy, and those seemingly delicate and endless operations of "exploring avenues" and "turning stones."

Lord Gainford said he was told that at the present time there were 75 firms at least with vehicles at work which were run by coal gas. The movement had passed the experimental stage.

Lord Teviot said he had every reason to believe that if the Government was a bit nervous about taking the risk, if facilities were given to other people, the matter would be carried out, and work would begin at once.

Lord Leathers (Minister of War Transport) said that thanks largely to the work of a committee set up by the Government in 1937, it had been possible shortly after the outbreak of war to put on the road producer-gas vehicles of a design which had the advantage of simplicity of construction and of operation. Since that date the vehicles had run between 4,000,000 and 5,000,000 miles in commercial operation, using anthracite and low temperature coke as fuel. Our supplies of petrol had so far been adequate for essential purposes, but the Government took certain steps to further the development of producer gas vehicles against a possible urgent need for them in the future. First, to encourage the use of producers on commercial vehicles, certain concessions as to taxation and statutory requirements were granted. Secondly, it arranged and financed investigation directed to widening the range of suitable fuels. Thirdly, it set up a technical advisory committee, including representatives of eleven leading transport organisations, six of which were actually doing research and development work on various forms of producers. The experience of these firms was pooled with that of the Fuel Research Station and the organisation was in being for testing any fuels or new producer gas equipment. Sustained road trials were now being carried out under commercial conditions. A programme for an immediate and substantial extension of the number of producer vehicles in service would entail a large diversion of industrial effort, a loss of efficiency in our road services, and a heavy diversion of coal supplies from existing users. Before sponsoring any such drastic extension, the Government must discharge its responsibility for seeing that the best technical solution of the problem was adopted, and we must be certain of getting good and reliable service from producer vehicles on the road. The Government would not wait for anything like perfection, but there really was a very great difficulty in putting before the road organisations at the moment an equipment that had so far justified anything like a big extension. The road trials that were now proceeding were showing rather better results than any before them, but he urged that they must wait a sensible time for these road trials to show whether just those disadvantages or imperfections that must be overcome could be overcome before anything like a real large scale development took place. At present there were two designs of producer under trial, both of which it was hoped would extend the range of suitable fuels—B.C.U.R.A. producer and the modified emergency producer. On the important question of the availability of fuels, they hoped to have the Report of Lord Henley's Committee in a fortnight.

The Duke of Montrose, who said he felt greatly encouraged by the Minister's reply, withdrew his motion.

Grand Union Canal Company

In the House of Commons on March 12 Sir Dennis Herbert (Chairman of Ways & Means) moved "That the obligations of the Grand Union Canal Company to promote a Bill to facilitate the consolidation of the Acts relating to the several parts of its undertaking and subsequently to promote a Bill to effect such consolidation, which obligations the company is required to fulfil in the Session of 1944 and the Session of 1946, respectively, by virtue of a promise given in the proceedings before the committee to which the Regent's Canal & Dock Company (Grand Junction Canal Purchase) Bill was referred in the year 1928 as varied by resolutions passed by this House on July 12, 1932, July 27, 1937, and June 27, 1940, be suspended until the expiration of the Emergency Powers (Defence) Act, 1939, and thereafter until the Minister of War Transport shall give to the company notice requiring it to promote such an Amending Bill and such a Consolidation Bill after the expiration of such interval from the date of the notice as may be specified in the notice not being less than two years in the case of the Amending Bill or four years in the case of the Consolidation Bill."

Sir Dennis said that Members would notice that the form of the motion which had been put down did not finally relieve the company from its obligations to amend and consolidate, but enabled the obligations to be revived on reasonable notice after the emergency period of the war.

The motion was agreed to.

Questions in Parliament

Motor Horse Boxes

Detailed information as to how many coupons in excess of basic petrol ration have been issued to owners of motor horse boxes used for the conveyance of racehorses to meetings under National Hunt Rules in the five months ended February 8, 1942, is not available. It is most unlikely that any supplementary issues of petrol were made. (Mr. P. J. Noel-Baker, Joint Parliamentary Secretary, Ministry of War Transport, March 10.)

Accommodation at Swindon Station

I am aware of the unsatisfactory conditions as to waiting and rest accommodation for members of His Majesty's Services at Swindon Junction Station. The Army Welfare Department is now constructing a new rest room for Service personnel on Swindon Station, and I trust that a considerable improvement will result. The Great Western Railway has made great efforts to provide this improvement. It has put at the disposal of the Y.M.C.A. a large part of its restaurant and certain room space, but the Y.M.C.A. has not been able to find the staff during the night, and, therefore, the troops have been without anywhere to go. The real responsibility for this lies with the Welfare Department of the War Office, which is constructing new rest rooms. It has been impeded by a shortage of timber, and we are endeavouring to speed up the supply. (Mr. P. J. Noel-Baker, March 11.)

Railway Sleeping Berths

All Government Departments have received a standing instruction that sleeping berths can be reserved by the Ministry of War Transport only for officials who are obliged to travel by night on business of national importance. I have no reason to suppose that this rule is being disregarded. Persons not eligible for reservations by the Ministry of War Transport are entitled, like any other members of the public, to reserve surplus berths through the railway companies. (Mr. P. J. Noel-Baker, March 11.)

Holiday Travel

The question of holiday travel is engaging my close attention. In view of the congested condition of railway travel, the need to prevent all unnecessary journeys and the restrictions on tyres and petrol, drastic economy will be required throughout the coming months in the use of transport for any purposes not connected with the war effort of the nation. While, therefore, the Government are anxious that all war workers should have one week's holiday during the coming summer, it will not be possible to provide facilities for long distance holiday travel. It is, therefore, desirable that industrial and other enterprises should arrange to stagger their holidays as much as possible, and it is hoped that many people will spend their holidays either in the neighbourhood of their homes or in walking or cycling. The policy that had been adopted was that there should be no special trains for holiday traffic and that at all times as much transport as possible should be reserved for essential war work, for the armed forces and for those engaged in direct war production. All Government Departments received strict instructions concerning the travel of their own officials and those working for them. (Mr. P. J. Noel-Baker, March 11.)

XUM

Notes and News

British Rolling Stock in Turkey.—The Turkish Minister of Transport & Communications has announced that 25 new locomotives and 650 goods vehicles, delivered from Great Britain, have been assembled and placed in service.

Mansion House Association on Transport.—Mr. Philip J. Noel-Baker, Parliamentary Secretary to the Ministry of War Transport, was the chief guest at the annual luncheon of the association, which was held at the Connaught Rooms, W.C.2, on March 24. A report of the speeches will be published in our next issue.

George Lunn's Tours Limited.—Notice is given in *The London Gazette* of March 17 that at the expiration of three months from that date the name of George Lunn's Tours Limited will, unless cause is shown to the contrary, be struck off the register of companies, and the company be dissolved.

Railways in French Colonies.—The French Colonial budget for 1942 provides for a total sum of fr. 3,500,000,000, reports the official German News Agency from Paris. This does not include the appropriation for Algeria, which comes under the accounts for metropolitan France. An amount is provided for the completion of the Niger dam and the construction of important canals, and a credit of fr. 800,000,000 is to be granted for further work on the Mediterranean-Niger Railway.

Great Southern Railways (Eire).—For the 10th week of 1942 the Great Southern Railways (Eire) reports passenger receipts of £31,770 (against £31,998), and goods receipts of £62,006 (against £49,811), making a total of £93,776, against £81,809 for the corresponding period of the previous year. The aggregate receipts to date are passenger, £306,138 (against £325,463), goods, £611,660 (against £502,897), making a total of £917,798 (against £829,360).

Swiss Federal Railways in January.—The working results of the Swiss Federal Railways for January are noteworthy for a declining tendency in goods traffic and an increase in working costs, says a message to the Official German News Agency from Zurich. Passenger traffic, with 12,300,000 persons carried and receipts of fr. 12,100,000, shows an increase of nearly fr. 700,000 compared with January of last year, but receipts from goods traffic, at fr. 16,500,000, show for the first time a decrease of about fr. 750,000. The working revenue in January amounted to fr. 29,800,000, which is the same figure as for January last year. Expenses, however, which totalled fr. 21,000,000, increased by fr. 2,500,000. This increase was due to higher wages, cost-of-living supplements, and extra expenditure on maintaining rolling stock and railway premises and on the consumption of materials and power.

Clogher Valley Railway Sale.—Arrangements have now been made for the disposal of the properties of the Clogher Valley Railway, which was closed to all traffic on December 31 last; the company is now in liquidation. The liquidator is prepared to receive tenders (by noon on March 31) for the following in one lot: The permanent way, consisting of approximately 37 miles of main line and 3 miles of sidings; 3 ft. narrow-gauge rails; sleepers and fixings; point crossings, rail switches, signals, and fittings; turntables; metal bridge (250 yd. west of Ballygawley Station): 20-ton wagon weighbridge at Tynan; 20-ton wagon weighbridge (incomplete) at Maguiresbridge; spare rails and fixings, along permanent way, except sleepers at Fivemiletown and Aughnacloy; four metal lamp standards; also, the railway telephone system, consisting of poles, wire, and instruments. These are to be sold as and where situated between Maguiresbridge and Tynan. In addition, Messrs. John Ross & Company, Auctioneers & Valuers, of Belfast, have been instructed by the liquidator to sell by auction on April 14, at Aughnacloy (County Tyrone): Diesel oil units, steam locomotives, passenger coaches, covered goods wagons, mineral and dual-purpose wagons, tool shop and woodworking machinery, stores, horizontal oil engine, water tanks, a Chevrolet lorry, station equipment, weighbridges, office furniture, safes, typewriters, and miscellaneous effects.

Chilian Transandine Railway Co. Ltd.—A meeting of creditors of this company is to be held at 140, Dashwood House, Old Broad Street, E.C.2, at 12.30 p.m. on March 31, to consider a resolution providing for the voluntary liquidation of the company. It owns 44 miles of metre-gauge railway from the City of Los Andes to the Chilean frontier, connecting with the Argentine Transandine system. As from May, 1923, the line was worked under a joint administration with the Argentine Transandine system; but in September, 1934, the administration was transfetred to the Chilean State Railways. The proposed liquidation is a preliminary to the line being taken over by the Chilean Government.

Port of London Rates and Charges.—The Port of London Authority on March 18 made certain alterations and additions in rates and charges in consequence of the introduction of a dock labour scheme for the Port of London under the Essential Work (Dock Labour) Order, 1941. Rates and charges for discharging vessels and for certain other services are increased by a further 20 per cent. on former increases of 20 per cent. and 27½ per cent. On import goods and goods for shipment the new increase in rates and charges (other than rent) is 15 per cent. Thus the former increases on goods which varied from 12½ per cent. to 65 per cent. are now raised to increases varying from 27½ per cent. to 80 per cent. Similar increases in rates and charges were put in force on March 18 by the members of the London Association of Public Wharfingers Limited.

L.P.T.B.'s 80,000 Salvage Collectors.—Not a ticket, a nut, or bolt, not an envelope or paper fastener is being overlooked by London Transport's staff of 80,000 in a great salvage hunt, which is being organised at every station, garage, workshop, and office in an area of 2,000 sq. miles. Since war began 200 tons of tickets (rail, bus, tram, trolley, and coach) have been saved and 700 tons of miscellaneous paper collected from the vehicles and the board's premises. Twenty sacks of paper a week are salvaged from 20 stations between Aylesbury and Willesden Green alone. Every morning dustmen cart off tons of paper and other litter left by shelterers at Underground stations. Four thousand official forms have been scrutinised and hundreds have been cut to half size, or less. Envelopes are used only when there are enclosures and economy labels permit them to be used several times. In London Transport workshops used steel files, formerly scrapped, are now recut; bolts and nuts are collected from all depots and the majority are reclaimed for rescrewing in a special plant. Scrap moquette from car seats is used for washing in the depots. Old axles from cars, formerly sold as scrap, are now used for production of forgings. Cutting tools, milling cutters, and so forth, are annealed and recut as new tools of a smaller size. Even electric lamp caps are salvaged and returned to the manufacturers. When destination blinds of buses and other road vehicles need renewal the linen is carefully separated from the paper and is used again; 34 tons a year is saved in this way.

Machine Tools (Birmingham) Limited.—Creditors of this company, which is now in members' voluntary liquidation, are required on or before March 31, to send their names and addresses and the particulars of their debts or claims and the names and addresses of their solicitors, if any, to the liquidator, Mr. William Le Resche Hand, F.S.A.A., of Fletcher's Chambers, Fore Street, Birmingham, 2.

Eccles Disaster Inquest Concluded.—A verdict of accidental death was returned at the adjourned inquest, held on March 18, on the 23 persons who lost their lives through the collision at Eccles, L.M.S.R., on December 30. Conflicting evidence was given as to the indications of the signals passed by the colliding train and the explosion or otherwise of detonators. Fog was stated to have been very dense.

Arabian Airways Limited.—Pursuant to Section 245 of the Companies Act, 1929, a general meeting of the members of this company (now in voluntary liquidation) and a meeting of its creditors will be held at the office of the Public Trustee, Kingsway, W.C.2, on Monday, April 20, for the purpose of having an account by the liquidator laid before them showing how the winding-up of the company has been conducted and its property disposed of.

The Demag Financial Structure.—The Deutsche Maschinenbau A.G., Duisburg (Demag) reports that it intends to transfer its holdings of more than 90 per cent of the shares of the Motorenfabrik Darmstadt (capital RM. 2 million) to its main subsidiary company, the Kämper Motoren A.G., Berlin. The latter has a capital of RM. 2 million, of which some 97·74 per cent. is in the hands of the Demag. The purpose of the amalgamation of the two motor manufacturing companies is stated to be a further rationalisation of administration and of production in order to achieve a better use of available manpower and of machinery.

Contracts and Tenders

The Argentine State Railways are reported to be requiring 400 40-ton flat wagons.

The National Railways of Mexico have placed an order in the United States for two 44-ton diesel-electric locomotives.

The Bengal & North Western Railway has placed an order, to the inspection of Messrs. Rendel Palmer & Tritton, for five "P" class locomotive boilers.

Caprotti Valve Gears Limited has received an order for ten further sets of Caprotti Valve Gear for the North Western Railway of India XT class engines making the fourth consecutive order and bringing the total engines of this class with Caprotti Gear to 67.

Forthcoming Meetings

May 6 (*Wed.*).—**Canadian Pacific Railway Company** (Annual general), at the company's principal office, Montreal, at noon.

STAFF AND LABOUR MATTERS

Railway Shopmen

The National Arbitration Tribunal on March 14 heard disputes affecting railway shopmen which had been reported to the Ministry of Labour & National Service by the National Union of Railwaymen. It is customary for matters affecting the rates of pay and conditions of service of railway shopmen, on which the parties have failed to reach agreement, to be referred to the Industrial Court for settlement and the reference of these claims to the National Arbitration Tribunal was a new departure and was the first occasion on which the tribunal has dealt with disputes affecting railway employees.

Award No. 198 deals with a claim for payment of 4s. a week allowance to certain categories of workers employed in the outdoor machinery departments of the four main-line railways. The dispute arose out of a claim that a 4s. a week allowance granted to grade I fitters and electricians in the outdoor machinery departments on ordinary time rates should be extended to all staff employed in these particular departments.

When the parties were heard by the tribunal statements were made and documents submitted as to the number of workers affected; their present base rates and conditions of service, the claim made on July 25, 1939, by the National Railway Shopmen's Council employees' side (on which the union then had representation) to the full council that the staff employed in the outdoor machinery department should be paid a differential of 6s. a week; the decision on April 30, 1941, of the National Railway Shopmen's Council (from which the union had by then withdrawn) to grant a flat rate allowance of 4s. a week to grade I fitters and grade I electricians employed in the outdoor machinery department; the extent to which workers employed indoors of grades similar to those covered by the claim are paid by piece; the extent to which the work concerned is dirty and dangerous; the provision that any case where a man is employed on work which is exceptionally dirty or dangerous in relation to the ordinary and customary duties of his class shall be considered on its merits with a view to an extra payment being made; decisions given by the Industrial Court on specific claims relating to men employed on certain outdoor work for an additional payment in respect of "exceptionally dirty or dangerous work"; and the extent to which claims made for extra payment for exceptionally dangerous or dirty work have in fact been met by the companies.

The tribunal finds against the claim and awards accordingly.

Award No. 199 deals with a claim that boilermen employed in the Cowlairs Works, Glasgow, London & North Eastern Railway, should be placed on piecework or alternatively paid a lieu rate of 33⅓ per cent. on their base rates.

When the parties were heard by the tribunal statements were made and documents submitted as to the number of workers concerned; the work in which they are engaged; their base rate of payment and conditions of service; the view of the Industrial Court that piecework and other systems of payment by results should be adopted and maintained to the greatest extent which may be found practicable and that wherever possible lieu rates should be abolished and a system of payment by results, where practicable, be substituted for the lieu rate system; the question of the practicability of employing the workers concerned on piecework; the application to the industry of the Essential Work Order; the nature of the boilermen's duties as affecting the possibility of transference to other work on which payment is made by piece; the payment of piece rates or lieu rates in the departments to which steam is supplied from the boiler shop; and the fact that the boilermen are not working in concert with staff who are paid piece rates or lieu rates.

The tribunal finds against the claim and awards accordingly.

Railway and Other Reports

Whitechapel & Bow Railway Company.—Net revenue for 1941 after giving effect to the estimated operation of the arrangements with the Government was £80,283 (same). Interest on the 4 per cent. debenture stock again takes £14,360, leaving a balance of £65,923 which is divisible equally between the L.P.T.B. and the L.M.S.R.

Canadian Pacific Railway Company.—Gross earnings for the year 1941 were $221,446,053 ($170,964,897) and working expenses, including taxes, were $175,488,517 ($135,325,459); net earnings were therefore $45,957,536 ($35,639,438), and with other income of $13,382,059 ($10,692,163) gave $59,339,595 ($46,331,601) available for fixed charges. Net income after fixed charges was $34,361,432 ($20,145,056). The full dividend on the 4 per cent. preference stock again absorbs $5,042,782, leaving $29,318,650 ($15,102,274) to be transferred to profit and loss, the balance of which, after transfer to investment reserve, etc., is now $170,385,936.

Buenos Ayres Midland Railway Co. Ltd.—The report for the year to June 30, 1941, states that the rent of £158,091 accrued due from the Buenos Ayres Great Southern and Buenos Ayres Western Railways under the working agreement of December 30, 1908, and the supplemental agreements, made July 14, 1913, and June 5, 1941, has been received, and the balance from the previous year is £1,562. The amounts distributed are:—for administration expenses, etc., £2,095, for debenture interest £92,970, for preference dividend £39,880, for ordinary dividend £15,035, for interest on advances by the working companies £5,365, and for N.D.C. £2,746, leaving a balance of £1,562.

Assam Railways & Trading Co. Ltd.—Railway earnings for the year ended March 31, 1941, improved from Rs. 21,04,512 to Rs. 21,51,383, but railway expenditure advanced from Rs. 12,35,844 to Rs. 13,13,560, making the operating ratio 61·06 per cent. against 58·72 per cent., and net earnings fell from Rs. 8,68,668 to Rs. 8,37,823. Net profits from general trading were Rs. 9,17,626, an improvement of Rs. 39,440. Working profits of both departments, together with dividends and interests on investments, etc., amounted to £142,620. After deducting £25,864 for provident funds and gratuities, directors' remuneration, and renewals and depreciation (£13,500), there is a balance of £116,756, to which is added £54,945 brought forward, making a total of £171,701. Debenture interest and dividends on the 8 per cent. pre-preference shares and the new 6 per cent. preference shares take £64,945, £54,402 is provided for possible taxation liabilities in India and the United Kingdom, and £3,000 is written off new issue expenses, leaving £49,354 to be carried forward. No dividend is being paid on the 8 per cent. cumulative "A" stock.

G. D. Peters & Co. Ltd.—Net profit for the year 1941 after providing for E.P.T. was £54,287, compared with £114,901 before making provision for E.P.T. The final dividend is 7½ per cent., making 15 per cent. for the year (same).

British and Irish Railway Stocks and Shares

Stocks	Highest 1941	Lowest 1941	Prices Mar. 20, 1942	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	43⅜	30⅜	42	+ 1
5% Con. Pref. ...	109½	83½	112½	+ 2
5% Red. Pref. (1950)	105⅛	96½	106	—
4% Deb.	113¼	102½	115½	— 1
4½% Deb.	115	105⅝	116½	—
4½% Deb.	121½	112	123½	—
5% Deb.	132	122	135	—
2½% Deb.	70	62⅝	71	—
5% Rt. Charge ...	129½	116	132½	+ 1
5% Cons. Guar. ...	128	110½	129½	—
L.M.S.R.				
Ord.	17¼	11	18	—
4% Pref. (1923) ...	53	33½	53	+ 1½
4% Pref.	68½	48½	70	+ 1½
5% Red. Pref. (1955)	97⅞	77	97½	—
4% Deb.	105⅞	97	105	— 1
5% Red. Deb. (1952)	110½	106½	109½	—
4% Guar.	100	85⅞	102½	—
L.N.E.R.				
5% Pref. Ord. ...	3⅞	2⅞	3½	—
Def. Ord.	2	1⅛	1⅜	—
4% First Pref. ...	52½	33	52½	+ 2
4% Second Pref. ...	19⅝	10	20	+ ⅛
5% Red. Pref. (1955)	79½	52	85	—
4% First Guar. ...	90½	74½	94½	—
4% Second Guar. ...	80½	59	82½	—
3% Deb.	79¼	68⅞	82	—
4% Deb.	104	91¼	104½	— ½
5% Red. Deb. (1947)	106	102½	104	—
4½% Sinking Fund Red. Deb.	103½	99 11/16	102½	—
SOUTHERN				
Pref. Ord.	65½	43½	63½	—
Def. Ord.	15⅝	9	15½	+ ⅛
5% Pref.	107	77½	108½	+ 1
5% Red. Pref. (1964)	107	89½	107	—
5% Guar. Pref. ...	128	111	129½	—
5% Red. Guar. Pref. (1957)	114⅞	107½	113½	—
4% Deb.	112	102½	112½	— 3
5% Deb.	130½	119	134	—
4% Red. Deb. (1962–67)	108½	102	107½	—
4% Red. Deb. (1970–80)	108⅞	102½	108½	—
FORTH BRIDGE				
4% Deb.	99⅞	90½	102½	—
4% Guar.	99	85½	102½	—
L.P.T.B.				
4½% "A"	120 13/16	109½	120½	—
5% "A"	130½	115½	129½	—
4½% "T.F.A." ...	103½	99½	100½	—
5% "B"	131⅞	102	119½	—
"C"	46⅞	28¾	39	—
MERSEY				
Ord.	24⅞	19½	21½	—
4% Perp. Deb. ...	100	90	100	—
3% Perp. Deb. ...	73½	63	75	—
3% Perp. Pref. ...	58	51½	57	—
IRELAND				
BELFAST & C.D.				
Ord.	4	4	4	—
G. NORTHERN				
Ord.	14½	3	13½	+ ½
G. SOUTHERN				
Ord.	14½	5	11	—
Pref.	17	10	16½	+ 1½
Guar.	44	16	38½	+ ½
Deb.	61	42	58	—

Railway Stock Market

With attention in the City centred on London's Warships Week, there has been very little activity in Stock Exchange markets, where, however, a firm undertone was maintained in British Funds. High grade investment securities, including home railway prior charges, were also firm; demand has tended to increase as a result of the reinvestment of funds arising from the recently requisitioned Canadian stocks; due to the fact that home railway debentures are in small supply and difficult to obtain in any amount, and that some of the senior preference stocks are now also in very moderate supply in the market, there has been a tendency for increased attention to be given to the higher-yielding preference stocks. Moreover, the junior stocks have improved on balance. The prevailing market view is that, when the Stock Exchange becomes reasonably active, a good deal more buying of the junior stocks will be in evidence. The substantial yields still obtainable on the latter are obviously out of line with the return on other groups of securities, and unless very heavy war damage is suffered, there seem excellent prospects of dividends being maintained, because of the financial agreement with the Government, which guarantees the annual rental to be paid to the companies. In fact, dividend prospects of other groups of securities of the ordinary or equity class are by no means as clearly defined, and they would, of course, also be affected in the event of heavy air raid damage. As to the future, more particularly the post-war outlook, which tends to influence all types of securities to some extent, satisfaction has continued to be derived from the recent annual meetings. It is clear from the latter that the companies' right to the standard revenues stipulated in the Railways Act of 1921 will form the basis for any future negotiations with the Government.

Great Western ordinary stock was in better request, and on balance improved further from 41 to 41⅜. Whereas the 4 per cent. debentures went back a point to 115, the guaranteed stock was maintained at 129½, and the 5 per cent. preference further improved to 112½. Among L.M.S.R. issues the chief feature has been a rise from 68 to 71 in the senior preference, reference to which was made last week. Moreover, this railway's 1923 preference improved from 51½ to 53, and the ordinary stock from 18 to 18¼. L.M.S.R. debentures failed to hold best prices, and the guaranteed stock was 102, compared with 103 a week ago. There did not appear to be increased attention given to L.N.E.R. guaranteed issues, despite the favourable yields; the firsts held the rise to 95 shown last week, and the seconds have remained at 82 at the time of writing. On the other hand, L.N.E.R. first preference improved from 50½ to 52, and the second preference was 20, compared with 19¼. Current market views are that there seems good scope for further improvement in L.N.E.R. first preference and also in L.M.S.R. preference issues, because of the favourable yields, and their satisfactory investment merits based on the financial agreement with the Government. L.N.E.R. second preference may tend to move more closely with the ordinary or junior stocks in which a return to more active conditions may turn a good deal on the general trend on the Stock Exchange. For the time being the latter may, perhaps, not show any material change, as there is, of course, a general disposition to await the Budget statement and a more favourable turn in war developments. Southern preferred, which at the time of writing is unchanged at 63¾, would also appear to give an unduly generous yield. The deferred stock at 15 was quite well maintained, and the 5 per cent. preference 108½. London Transport "C" was unchanged at 39.

A bright feature was provided by a fairly general improvement in South American railway securities, the lower prices made recently having attracted a little buying. Debenture stocks of the Argentine companies were found to be in short supply. Indian railway stocks again made lower prices. Although the wisdom of conserving resources was realised, the market was disappointed with the decision not to pay a dividend on Canadian Pacific, which, however, showed a partial rally following an earlier decline.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1941-42	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1941	No. of Weeks	Aggregate Traffics to date: Totals: This Year	Aggregate Traffics to date: Totals: Last Year	Aggregate Traffics to date: Increase or Decrease	Shares or Stock	Prices: Highest 1941	Prices: Lowest 1941	Prices: Mar. 20 1942	Yield% (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	15.3.42	22,090	+ 1,980	11	203,450	182,030	+ 21,420	Ord. Stk.	10⅜	3 11/16	9	Nil
	Argentine North Eastern	753	14.3.42	ps. 154,600	+ ps. 43,500	37	ps.6,466,600	ps. 5,450,900	+ ps.1,015,700	,,	4	1	3½	Nil
	Bolivar	174	Feb.,1942	4,612	+ 1,132	9	9,572	6,680	+ 2,892	6 p.c. Deb	5	5	9	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	8	2 13/16	10½	Nil
	Buenos Ayres & Pacific	2,821	14.3.42	ps.1,660,000	— ps.285,000	37	ps.52,442,000	ps.50,123,000	+ ps.2,319,000	Ord. Stk.	7¾	1½	5	Nil
	Buenos Ayres Great Southern	5,080	14.3.42	ps.2,895,000	+ ps.37,000	37	ps.89,430,000	ps.79,439,000	+ ps.9,991,000	Ord. Stk.	10¼	3½	8	Nil
	Buenos Ayres Western	1,930	14.3.42	ps. 957,000	— ps.76,000	37	ps.31,320,000	ps.27,224,000	+ ps.4,096,000	,,	9	2½	7	Nil
	Central Argentine	3,700	14.3.42	ps. 1,763,300	— 240,450	37	ps.65,173,400	ps. 56,265,300	+ ps.8,908,100	,,	8½	2½	5½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	2½	½	2½	Nil
	Cent. Uruguay of M. Video	972	7.3.42	31,081	+ 6,372	36	857,607	787,965	+ 69,642	Ord. Stk.	9½	1	5½	Nil
	Costa Rica	262	Feb., 1942	21,014	+ 2,106	34	180,476	152,672	+ 27,804	Stk.	15½	11¼	13	15⅝
	Dorada	70	Feb., 1942	10,584	— 1,416	9	21,184	24,200	— 3,016	1 Mt. Db.	97	97	90½	6⅝
	Entre Rios	808	14.3.42	ps. 227,900	+ ps. 46,900	37	ps. 9,503,100	ps.7,959,600	+ ps 1,543,500	Ord. Stk.	6½	½	5	Nil
	Great Western of Brazil	1,030	14.3.42	9,500	+ 200	11	124,900	125,700	— 800	Ord. Sh.	11/-	1/-	⅜	Nil
	International of Cl. Amer.	794	Jan.,1942	$178,513	+ $68,162	4	$178,513	$110,351	+ $68,162	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref	⅜	6d.	½	Nil
	La Guaira & Caracas	22¾	Feb.,1942	5,960	— 1,390	9	12,390	13,475	— 1,085	—	—	—	—	—
	Leopoldina	1,918	14.3.42	32,616	+ 7,116	11	314,114	257,406	+ 56,708	Ord. Stk.	4	¼	3½	Nil
	Mexican	483	14.3.42	ps. 348,400	+ ps 39,600	11	ps. 3,464,900	ps 3,226,000	+ ps. 238,900	,,		¼	1	Nil
	Midland of Uruguay	319	Jan.,1942	13,595	+ 864	30	94,595	82,608	+ 11,987	—	—	—	—	—
	Nitrate	386	15.3.42	5,162	+ 2,272	11	24,928	20,499	+ 4,429	Ord Sh.	66⅜	1 11/16	3½	3⅜
	Paraguay Central	274	14.3.42	$4,545,000	+ $1,521,000	37	$127,347,000	$120,953,000	+ $6,394,000	Pr. Lt. Stk	43/-	29	42½	14⅛
	Peruvian Corporation	1,059	Feb., 1942	69,053	+ 13,241	35	582,024	516,957	+ 65,067	Pref.	6½	1 1/16	7	Nil
	Salvador	100	Jan., 1942	c 138,000	+ c 24,000	30	c499,172	c 402,683	+ c 96,489	—	— 3/16	—	—	—
	San Paulo	153¼	8.3.42	36,250	+ 4,338	10	340,500	322,487	+ 18,013	Ord. Stk.	52	24½	41½	4 11/16
	Taltal	160	Feb., 1942	4,220	+ 1,145	35	35,115	22,510	+ 12,605	Ord. Sh.	1	6/-	1 1/16	Nil
	United of Havana	1,346	14.3.42	64,097	+ 15,112	37	917,906	746,372	+ 171,534	Ord. Stk.	2½	⅜	3	Nil
	Uruguay Northern	73	Jan.,1942	954	— 208	30	8,908	8,251	+ 657	—	— 3/16	—	—	—
Canada	Canadian National	23,562	14.3.42	1,337,000	+ 287,600	11	12,804,000	10,302,200	+ 2,501,800	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—	Perp. Dbs.	94	85½	—	—
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gr.	104⅞	99½	—	—
	Canadian Pacific	17,139	14.3.42	947,600	+ 211,600	11	9,217,000	7,189,000	+ 2,028,000	Ord. Stk.	13 7/16	7⅛	10½	Nil
India†	Barsi Light	202	Dec.,1941	10,605	— 3,720	35	125,677	119,880	+ 5,797	—	—	—	—	—
	Bengal & North Western	2 299	Feb , 1942	253,950	+ 22,121	49	1,369,985	1,312,583	+ 57,402	Ord. Stk.	345	253	355½	5⅜
	Bengal-Nagpur	3,267	20 12.41	301,775	+ 37,029	38	7,000.994	6,315,530	+ 685,464	,,	101	95⅜	93½	4¼
	Madras & Southern Mahratta	2,939	31 12.41	215,400	— 2,784	39	5,402,426	4,552,904	+ 849,522	,,	105 7/16	101½	92½	9½
	Rohilkund & Kumaon	571	Feb ,1942	53,475	— 12,594	22	266,764	286,327	— 19,562	,,	342	290	342½	4 11/16
	South Indian	2,402	31.12.41	154,944	+ 11,936	13	3,965,173	3,432.494	+ 532,679	,,	100	87	94½	3 11/16
Various	Beira	204	Jan.,1942	68,716	—	17	288 331	—	—	—	—	—	—	—
	Egyptian Delta	610	30.11.41	12,971	+ 2,158	34	208,684	148,268	+ 60,416	Prf. Sh.	1½	29/-	2¼	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	68	45	40	8⅜
	Midland of W. Australia	277	Sept., 1941	20,320	+ 1,375	9	58,977	43,885	+ 15,092	Inc. Deb	90½	85½	89½	6 11/16
	Nigerian	1,900	27 12 41	56,220	+ 7,159	38	2,112,188	1.537.595	+ 574,593	—	—	—	—	—
	Rhodesia	2,442	Jan., 1942	471 753	—	17	1,899.961	—	—	—	—	—	—	—
	South Africa	13,291	14 2.42	817,072	+ 113,924	46	35,159,964	31,920,165	+ 3,239,799	—	—	—	—	—
	Victoria	4,774	Oct. 1941	1,144,416	+ 135,932	17	4,19,958	3,657,388	+ 540,570	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of ⅛ Argentine traffics are given in pesos
† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend